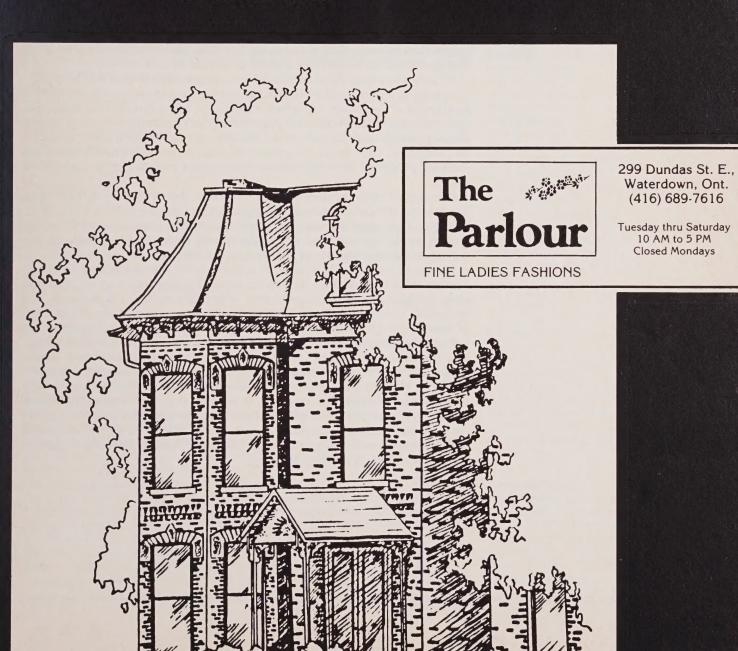


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Are There Really Greener Pastures?

Vatican Splendour, a special exhibition organized by the National Gallery of Canada is touring the country this year. We have used the occasion to offer three articles about the arts of 16th- and 17th-century western Europe that reflect different versions of a theme that has played an important part in human thought: the picture (if not always the pursuit) of the ideal life, be it in this world or the next.

Our lead story is about the 17th-century papal commissions of art for the adornment of St Peter's Basilica in Rome. Chandler Kirwin, an expert in the field, explains that the art of the Vatican was an expression of the basilica's role as a martyry and of the importance of martrydom to Catholicism. At the time of the Reformation and the political upheavals that challenged the Vatican's authority, the dramatic baroque masterpieces of grandiose scale, created by the sculptor Bernini and his contemporaries, were intended to inspire the faithful to seek their salvation in the Church, as well as to guarantee their spiritual and temporal allegiance to the Church.

During the 15th and 16th centuries the artists of the Renaissance had as their objective the revival of the ideals of classical Greece. A group of Italian artists, known as the mannerists, gained some notoriety in the early years of the 16th century because they satirized the art of the Renaissance masters. Their satire is the subject of the second article on the ideal life. As Jill Finsten points out, until the 20th century there was little appreciation for their supercilious responses to the masters of the Renaissance. The current popularity of mannerism in our society is due to the fact that, like the mannerists, we often find the world far too serious a place to constantly take seriously.

Moving away from the sacred and the sacrilegious in the third article, Brigitta Schmedding writes about a Chinese Arcadia depicted in the woven and printed patterns of 17th-century European textiles. The haute bourgeoisie of Europe, who decorated their homes and upholstered their furniture with these fabrics, did not always have to look to the ancient past or heavenwards for models of a better life. Their visions of greener pastures were fuelled by the illustrated journals published by missionaries, traders, and explorers who had visited

China.

Our other feature articles describe situations that were far less than ideal but that nevertheless concluded happily. Barbara Ritchie tells us about lucky accidents that saved the day after some vinicultural disasters. And Desmond Collins recounts another episode in the history of the Burgess shale: the discovery of the true identity of the world's first monster, the *Anomalocaris*.

We know how much readers of *Rotunda* have enjoyed Walter Kenyon's articles, which range from reports on his findings at Indian grave sites and early Arctic exploration to the history of building with wood. Kenyon, one of Canada's leading archaeologists and a former curator in the Department of New World Archaeology, passed away on 10 September. Perhaps the most telling tribute to Walter's accomplishments, not only as a scholar but simply as a human being, was the prevalent response to news of his death. Before they could shed a tear, each person recalled some witty or insightful observation that Walter made or one of his spontaneous compliments that would brighten up the whole day. Ironically it is appropriate that some of the feature articles in this issue of *Rotunda* are often a teasing reminder of what we, and not just our predecessors, think is best in life. For those of us who knew Walter Kenyon personally or through his work, there is certainly more substance for reflection on the subject.

ROTUNDA the magazine of the Royal Ontario Museum

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Cover: This portrait of a noble from the Qing Dynasty of the late 18th century is one of the highlights of the ROM Chinese collection now on display in our recently opened Later Imperial China galleries. Turn to the story on page 63. Photo by Bill Robertson.

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Letters to the Editor

Darwin and Huxley

I find it refreshing that the director has chosen to give us his views on how a public relations program is necessary to market the scholarly substance of the Museum (Rotunda, vol. 19, no. 1). However, he is mistaken in stating that Thomas Huxley was essential for the popularization of Charles Darwin's views. Darwin's publications, in themselves, were enough to bring his views to public attention. His first book, The Voyage of the Beagle (1839) made Darwin a public figure even before he established his scientific reputation by publishing his collections (1840-1843), his book on coral reefs (1842, 1849), and his tomes on barnacles

(1851-1854). When his natural selection paper was read before the Linnean Society on 1 July 1858, he was well known to both popular and scholarly audiences. On 24 November 1859, his eagerly awaited book on natural selection was published and the press run of 1500 copies sold out in days (some forty copies were distributed for review). On 14 December, the publisher decided on a second edition of 3000 copies. Obviously this evolution book was a big seller before Huxley's review appeared in the Times on 26 December.

Huxley got into the act again on 30 June 1860, when Bishop Wilberforce denounced evolution at a public discussion. He was rebutted by several scientists, including Huxley, but contemporary accounts recognized botanist Joseph Hooker, rather than Huxley, as putting up the most telling defence. It was twenty-five years later that the "official" version of the celebrated rejoinder about preferring an ape to a bishop as an ancestor was published (Gould, 1986, *Natural History*, vol. 95, no. 5).

The foregoing suggests that Huxley's "marketing" was not necessary for the public recognition of Darwin's great achievements—their substance alone would have been enough. Darwin did not need Huxley, but rather Huxley needed Darwin.

> J.H. McANDREWS TORONTO

Durrell in Russia

While perusing the summer issue of *Rotunda* (vol. 19, no. 1) this evening, I was quite enjoying Gerald Durrell's "The Other Russians", when suddenly, on page 24, I read "... we flew by helicopter along the length of Lake Baikal, the largest body of fresh water in the world ..." I hate to disagree with the sagacious Mr Durrell, but Ozera Baykal (Lake Baikal), while perhaps the deepest lake in the world, is only the ninth largest.

Russophiles can take heart, however, as they can still claim Kapiskoye More (Caspian Sea) as the world's largest lake, although Canadian lacustrine experts will nonetheless correctly assert that Lake Superior is the world's largest lake, since the shallow Caspian Sea is really more an overgrown pond than a true lake.

HARRY KOZA TORONTO

(You are right. Lake Baikal is only the deepest lake in the world.

ED.)

Visiting the Chelsea Physic Garden

I've just returned from a visit to London where I spent a morning walking around Chelsea where I was enchanted to discover the Chelsea Physic Garden. Imagine my delight to find the article "Physic in Flower" in *Rotunda* (vol. 19, no. 1). Thank you for providing the answers to so many questions. I couldn't find out very much on my own, and I found the article most interesting.

SHEILA A. PROCTOR TORONTO

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Corporate Identity and the Modern Institution

As I look back over my first year as director, what is it that now strikes me as the most important challenge facing the Museum? Is it money? Board-management-staff relations? Staff morale? Gallery development? Public image? Government attitudes?

Important as each of these issues is, none strikes me as the central one. This Museum must face a challenge common to many organizations in Western society today: the need to sustain a true sense of corporate identity. I use the word corporate as an anthropologist rather than as a businessman, and in doing so I think back to the origins of man's first corporate institutions in ancient Mesopotamia and Egypt.

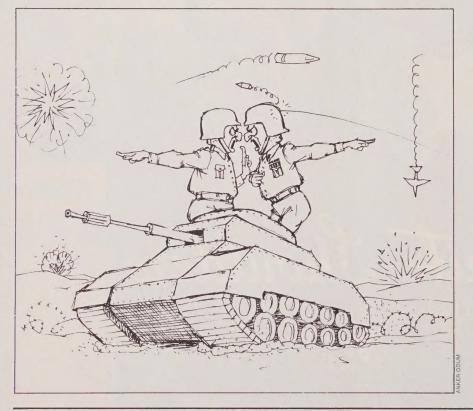
For the whole of human prehistory corporate social structures and institutions were not required to keep society well-oiled and running smoothly. Simple kinship systems linking individuals and groups were all that was needed to structure society in an uncomplex world. Such systems of political, economic, and social organization were based on either real or invented blood relationships between human be-

ings, and these relationships were sometimes elaborated into tribal or clan groupings.

One's personal identity was defined in terms of such relationships, and an extension of the relationships provided the matrix within which one lived and worked. Then, shortly before 3000 B.C., the Sumerians and the Egyptians, living in the great river valleys of the lowland Near East, were gradually forced to confront technological, demographic, and economic challenges that were far too complex to be dealt with in the context of the old simple forms of social organization. The world's first civilizations were about to be born.

With civilization came corporate institutions, which served people as new ways of relating to one another as individuals and as groups. On the most complex level of social interaction the corporate institution that developed in Egypt was the Pharaonic state with all of the religious ideology needed to make the state organization work. In Mesopotamia, the comparable corporate institution was the city state, supported by organized religion devoted to the municipal god or goddess housed in the city's temple.

Numerous other corporate institutions rapidly developed on a lower level of social interaction. For example, as craft specialization became common, individuals grew attached to and identified with professions. No such phenomenon had existed in more simple times. Now, however, in the civilized state, one worked for a temple or in a potter's shop; one served in an army or functioned as a member of the scribal class: all in common purpose with others who were not relatives or even members of the same extended family or clan. While kinship structures were not abandoned (we still have them today), people increasingly lived their lives together within the context of a corporate institution. In due time one came to belong to and participate in any number of separate corporate structures, each defined in its separate way.



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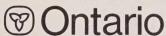
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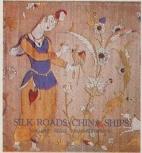
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Historically such corporate institutions have reached their maximum elaboration in modern Western civilization. In the Near East, however, their development seems to have been partially arrested, with the result that one's kinship and tribal ties often remain as important and as significant as one's identification with a corporate institution such as a guild, a business, or the nation state. It has been argued that the real power of Western civilization—so often described simplistically in terms of technological superiority and disproportionate wealth—actually lies in Western mastery of the corporate institution. In other words, the West's power comes from its ability to maximize the inherent strength and flexibility of non-kinship forms of social, economic, and political organiza-

Here is a simple example that illustrates this thesis. The Arabs lost the 1967 war not because Israeli tank crews were braver than Egyptian or Syrian crews; any observant Israeli soldier will tell you that the bravery of the individual Arab soldier is remarkable. And they did not lose because their tanks were technologically inferior; in fact their Soviet-supplied armour was, for the most part, better than the material that the Israelis then had. They lost primarily because their tank crews lacked the spirit, power, and social cohesion that comes with a corporate institution. A tank crew is just such an institution. It is a group of people who come together from different walks of life, different backgrounds, different family structures, and different social experiences, yet who learn to work together as a team, and to trust one another, because they identify with each corporate institution—the tank, the tank company, the battalion, the army, the government, and the nation. One cannot build such power on the basis of tribe or kinship. As an old Arab saying goes,"I really only trust my brother . . . and sometimes I have doubts about him." How can you make a

battle tank work effectively when

manned by people rooted in such a philosophy of social organization?

It can be further argued that our corporate institutions in the West became more powerful as we gradually emphasized the value of the individual. At first glance this seems paradoxical. Yet it makes sense to suggest that the most effective corporate institutions will be those whose members belong because they have chosen to do so, rather than because they have been born or forced into the institution. Furthermore, the individual's sense of self-worth and of freedom can provide the corporate structure with a creativity it could not generate from an apathetic mass of humanity.

Individualism run rampant, however, threatens corporate institutions. There is a delicate balance to be maintained between the legitimate needs and concerns of the individual and those of the corporation. Without balance the system comes apart. In a larger institution, such an imbalance is often first noticeable in the rapid growth of

new, smaller corporate institutions within the larger structure. Estates or interest groups whose real and perceived needs often run counter to those of the institution become increasingly the focus of the individual's energy and skill. When such groups increase in number and power, the larger corporate institution begins to die.

As we look around us it is easy to find organizations in such a condition in our society. The Christian church is a good example. Many universities qualify. The family itself—in our culture actually a small corporate institution—is in trouble. And cultural organizations, including our own, are not immune.

Corporate institutions are as much a part of our heritage as the artifacts that we in the museums seek to study and preserve, and the natural world that we wish to understand. Maintaining the integrity of the institutions is, therefore, of equal importance.

T. CUYLER YOUNG, JR



Magical Properties

Common garden plants may have magical properties that have little to do with their appearance or their ability to grow well.



Call a garden a magical place and most of us think of atmosphere. We recall an abundance of flowers, tree shadows dappling the grass, unexpected vistas glimpsed through shrubbery or a trellised vine. But gardens are magical in another, more direct, way. Many of the plants we comfortably accept simply because

they're pretty or because they happen to grow well have powers quite out of the ordinary.

Some beliefs seem fanciful or even amusing to us today. Carry sweet peas in your hand and everyone you meet will be compelled to tell you the truth. Try that one on a politician come election time. Or wear a sprig



of thyme in your hair (providing you're a woman); it's guaranteed to make you irresistible. Put a large red-ripe tomato on your mantelpiece—replacing it every three days—and prosperity will bless the home. These snippets of folk wisdom have a certain odd charm. Other beliefs fit more comfortably with our current view of the world.

Willow trees have long enjoyed a reputation for powerful healing spells. Witches, well versed in plant lore, effected cures by administering a willow potion. As far as pain-racked patients were concerned, the ache had appeared without apparent cause. After they swallowed the witch's mixture it disappeared just as mysteriously. The obvious answer? Magic. In fact, the potion worked because willow bark contains the operative ingredient in modern aspirin.

Willow, in fact, is one of the most important plants in a witch's collection even today. Two Toronto practitioners of the ancient arts listed it, along with comfrey, mint, hyssop, skullcap, chamomile, and basil, among their indispensables. They had a difficult time choosing, so important are plants and their oils and extracts to the practice of both herbal medicine and magic. Comfrey is a herb of protection (tuck some in your suitcase, one book says, so it won't be lost when you travel). Mint is for healing and prosperity, among other things, so it may be advisable to keep a few leaves in your wallet or purse. Hyssop is vital for purification rituals that banish evil and negativity. Skullcap ensures relaxation and peace. Chamomile, it's said, attracts both money and love, and also purifies and protects. Basil's accomplishments include love, divination, attracting wealth, protection ("where it is, no evil can live"). and even some sneaky help for dieters. One ancient spell claims no one will be able to eat a bite from any plate which has had a sprig of basil surreptitiously placed beneath it.

Not all plants are so helpful. Witches *could* drive people mad. Ergot, for just one example, contains the natural form of lysergic acid; a little of that in your system leads to some very unpleasant hallucinations. Observing someone unlucky enough to have drawn a witch's ire might well make others certain that a spell was to blame.

Plants do indeed have power, and familiarity with their properties, patiently gathered, confers even greater power on the knowledgeable practitioner. No wonder much of the lore was kept secret. Some plants can do tremendous damage, although most of the potentially harmful ones (such as digitalis) can be used for good as well as ill. The darker knowledge exists, but it is passed down by word of mouth from practitioner to trusted pupil, intended for use only in the most dire emergency. To attempt magic for evil purposes, all sources warn, is to invite desperate trouble for yourself. What you sow, returns to you three times over.

Even so-called white magic must be approached with caution, not least because prejudice against it is rampant. And yet, the fascination



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persists. How does plant magic work? The way is described by one author as a series of five steps. First, there must be a true *need*, not just a desire for something. Next, a spell or ritual may have to be devised—possibly something as simple as tying various herbs in a piece of cloth. Then the plant materials are enchanted (literally, sung to), and the spell performed in complete secrecy. Finally, he says, the spell must be put completely out of mind to allow it to work in peace. Concentration plays a part, and stilling the mind, as in meditation, is also important. Certain paraphernalia may prove useful as well: string, ribbon or thread to be tied into knots, woollen or cotton fabric, and coloured candles.

But the most important part is played by the plants themselves. Questions about why certain herbs, trees, or flowers have particular properties lead into a complex world where everything from a blossom's colour to the chemical substances it contains may provide an explanation. This esoteric information—or that part not considered too secret to be openly written down—fills enough books to furnish a fair-sized library.

For most garden lovers, it may be enough to learn that many of their cherished plants have lent themselves to other, exotic uses. Remembering the first violets of spring, consider they can be sprinkled on salads to comfort the heart. If goldenrod springs up near the house, unexpected good fortune will soon arrive. Yarrow attracts those you most want to see. Lilies, on the other hand, discourage unwanted guests. Plant pansies in the shape of a heart and if they prosper, your love will too. Just to be sure, you may want to follow one more practice. Take cider (the natural, unprocessed variety is said to be best) and pour it on the freshly turned ground before you plant. This juice of the apple is seen as an equivalent of blood in modern magic and, as we all remember, giving life to the soil in this ritual way is one of the oldest beliefs of all.

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Plant Alert What to Watch for in the Winter

As winter approaches poison control inquiries are concerned more with indoor than with outdoor plants. Shrubs, trees, and other garden plants pose little threat in late fall and winter because most have lost their leaves and fruit, and any fruit that does remain is shrivelled, and therefore unappealing to the inquisitive palate. However, house-plants remain to attract the attention of small children and pets, who are indoors more often at this time of the year. Common nonpoisonous house-plants include: umbrella plant (Scheflera arboricola), spider plant (Chlorophytum comosum), asparagus fern (Asparagus densiflorus), Swedish ivy (Plectranthus australis), and English ivy (Hed*era helix*). Even though these plants are safe, it is best to teach children to stay away from all plants.

On an annual basis, more poisoncontrol calls are received about house-plants than about any other group of plants. Most often the plants have been received as gifts, and the recipients neglect to learn the identities of their new acquisitions. The best precaution against poisoning is to know what plants you own and to find out if they contain toxins. If they are poisonous, keep them out of reach, and then enjoy them.

The most commonly encountered poisonous house-plants are members of the Arum family (Araceae). Most members of this family contain oxalate crystals—sharp crystals found in the leaf and stem tissue of the plant. Consumption of parts of plants containing oxalate crystals will cause their victims burning sensations and swelling of the tissues of the lips, throat, and wind passages. In extreme cases the wind passages become completely blocked.

Beware of the following house-plants.

Dumbcane (Dieffenbachia picta): This plant is a member of the Arum family, and it is frequently the subject of the inquiries that we receive. It grows upright, ranging in size from twenty-five centimetres to over three metres. The leaves can be as long as thirty centimetres and are widest below the middle, narrowing to the tip. Each leaf has its own stalk (petiole), which ranges from ten to fifteen centimetres in length, and broadens at the base to a wing,

From left to right: Dieffenbachia, Philodendron, and croton







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ILLUMINATIONS

which wraps around the stem of the plant. When leaves are removed from the stem, grooved scars remain that give the stem the appearance of bamboo. Recently we received a call from a person who had been given a stalk of *Dieffenbachia* to plant. The caller had mistaken the plant for sugar cane and had eaten it. The consequences of the mistake were far from sweet.

Philodendron: Also a member of the Arum family, the most common plant in this group is *Philodendron* scandens, a vine often sold as a hanging plant. It has heart-shaped leaves, usually about five centimetres long which taper to an abrupt point. Each leaf has a petiole of approximately 1.25 centimetres in length, and the leaves are arranged alternately on either side of the stems. The leaves are thin and shiny, varying in colour from green to a green variegated with white or yellow. A larger relative Philodendron bipinnatifidum is popularly known as the panda plant. It grows upright from a thick base to a height of approximately one hundred and fifty centimetres. The leaves have deep fingerlike lobes with a groove at the base where the leaf attaches to a petiole that can be as long as sixty centimetres. These are just two examples of the very popular but also poisonous genus.

Emerald Green, Imperial White, or Arrowhead (Syngonium podophyllum): The leaf is shaped like an arrowhead, often with additional lobes at the base. Each leaf is on an individual stem, and all the stems converge at the base of the plant. The leaf often has a vein that runs parallel to the outer margin, outlining its shape.

Other potentially harmful members of this family are *Caladium* and *Aglonoema*.

Jerusalem Cherry (Solanum capsicastrum) and Christmas Pepper (Capsicum annum): These are fruit-bearing plants that belong to Solanaceae, the tomato family. Though not extremely toxic, Jerusalem



Christmas pepper

cherry does contain small quantities of solanine and other glycoalkyloids in its leaves and fruit. When the toxins are ingested in large quantities, they may cause their victims headaches, stomach pains, vomiting, diarrhea, and slowed heart beat.

Jerusalem cherry is an upright plant that grows to a height of forty-six centimetres. The leaves are oval, grow alternately on the stem, and are very similar in appearance to tomato leaves. The orange-red fruit grows at the end of the branches. The fruit is approximately 1.25 centimetres in diameter and looks like a small tomato or cherry.

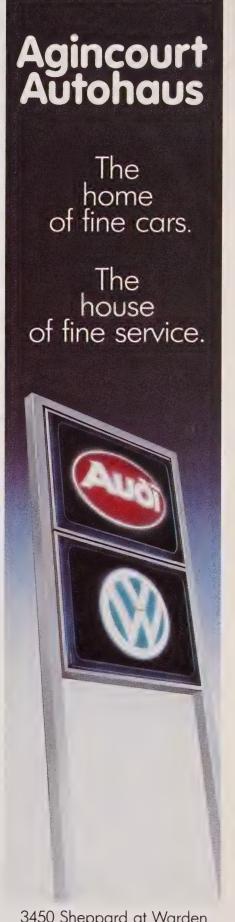
The foliage of the Christmas pepper is very similar in appearance to that of the Jerusalem cherry, but the plant is usually smaller. The fruit is oval or pepper-shaped and has many seeds. The Christmas pepper contains the volatile oil capsaicin. If the oil comes into contact with any skin surface, it causes lasting irritation.

As Christmas approaches, two plants that are commonly used for decoration are potentially dangerous to very small children. Holly *Ilex*

sp., may be recognized by the evergreen leaves, which have spines at the tip of each lobe. The leaves grow alternately on the stem, and the berries are red, single-seeded, about six millimetres in diameter, and borne singly or in small clusters along the branches. The berries are mildly toxic (toxin unknown), and small children who eat them may suffer diarrhea and vomiting.

The second plant is the poinsettia (Euphorbia poinsettia), easily recognized by its showy red or white bracts (often mistaken for petals) and its small yellow flowers. The plant is a member of the spurge family Euphorbiaceae; many members of this family contain diterpines in the latex that can cause skin irritation and serve as a purgative. Other members of this family are the pencil tree (Euphorbia turicalli) and the croton (Codiaeum variegatum). Croton, which is a common house plant, has colourful red, green, yellow, and black leaves that are quite leathery and may be slightly irregularly lobed. The plant is often used as a showy ornamental.

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Papally Yours

Masterpieces of Baroque Art from the Vatican

W. Chandler Kirwin

The splendour of the Vatican's baroque decoration is a thrilling public testament to the glory of God.

HILE in the geological record a century may be no more than a fleeting instant, in the human record a century may be an era distinguished by achievements that make it unique as a period of time. In one single century, the seventeenth, baroque painters and sculptors produced some of the most spectacular creations in the history of Western art. And while the geologist must piece together a picture of prehistoric times from evidence that is fragmentary and often indirect, and has undergone millions of years of change, the historian of baroque art can experience the objects of his study at first hand in all of their original splendour. The pinnacle of baroque artistic expression can be seen in Rome.

By the early 16th century, the Church's majesty in Rome had been proclaimed most publicly by the grandeur of the Vatican. Papal reassertion of the Catholic claim to temporal and spiritual domination came in direct response to the religious wars that were spawned by the Reformation. During the baroque age, Rome was adorned with monuments whose purpose was to give visual expression to the temporal and spiritual claims of the papacy. Special attention was paid to those parts of the Vatican that would be visited by the huge numbers of pilgrims and travellers to the Eternal City.

Scores of artists were hired to create for the Vatican art that would proclaim the Church triumphant. St Peter's Basilica, which marks the site where according to tradition Peter is buried, is the most important structure in the Vatican. Accordingly the popes of the baroque era channelled most of their artistic commissions into the glorification of this holiest of sites.

Modern-day visitors to the Vatican retrace the itinerary of earlier travellers, who caught the spirit of the place that later would be glorified in the art. Let us, therefore, begin our journey by hearing from an earlier, perceptive visitor, who experienced Rome at the dawn of her new age.

In late November of 1580, the preeminent French politician and essayist Michel de Montaigne arrived in Rome for a five-month stay. Although he spent much more time there than most modern tourists do, and was received by the pope and his clerical associates, Montaigne lamented: "While I was in Rome, I saw it only in a general and public sort of way, as any obscure stranger might have done."

Opposite page: St Gregory and the Miracle of the Corporal by Andrea Sacchi, oil on canvas, 285 x 207 cm, St Peter's Basilica, Rome





This aerial view of Rome shows the Vatican's location in the heart of the city.

Montaigne was particularly taken by the size and stupendous ruins of the ancient city, the Church's role as the only industry in town, and the seemingly endless succession of religious festivals. At Easter he witnessed one of the most moving public events, which took place inside St Peter's: the display of Veronica's handkerchief and the tip of the lance of Longinus, two of the most important relics belonging to the Catholic church. The handkerchief was supposedly used by Veronica to wipe Christ's face as he struggled under the weight of the cross, and it miraculously became marked with the features of his face. Longinus had plunged the lance into Christ while he was bound to the cross.

In his description of the event Montaigne stated:

[the handkerchief has] the representation of a face; this is shown to the people with much ceremony. The priest who holds it has his hands covered in red gloves. There is nothing regarded with so much reverence as this; the people prostrate themselves on the ground before it, most of them with tears rolling down their cheeks. The priest takes the effigy around and presents it to the people in each direction, and at each of these pauses the crowd raises a loud cry. They also show at the same time, and with the same ceremonies, the head of the lance. This exhibition takes place several times during the day, and the assemblage of people is so vast, that outside the church, as far as the eye can see, you can see nothing but the heads of men and women, so close together that it seems you could walk upon them. It is a true papal court; the splendour and the principal grandeur of the court of Rome consist in these devotional exhibitions.

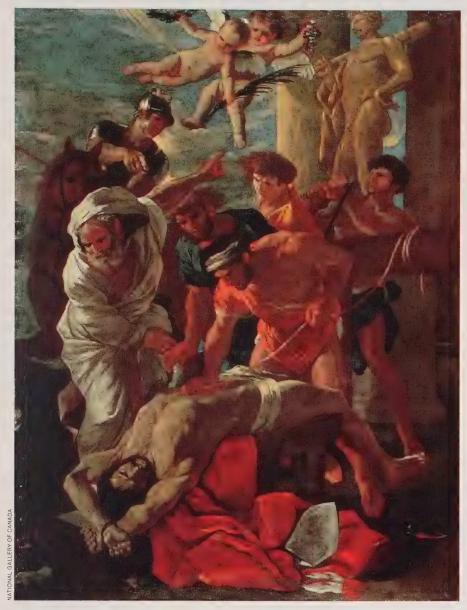
Montaigne emphasized the relics as the outward and visible signs of an inward and spiritual grace. The two relics of the handkerchief and lance were extremely important because they represented Christ's martyrdom and were links in an unbroken martyrological chain that eternally joins him and his disciples, who were also martyred, with the army of Christian followers who died for their faith. St Peter's was originally built as a martyry, for martyrdom had become vital to Catholic identity. The veneration of relics had always been important to Catholicism, but in reaction to Protestant denials of their historical and spiritual values, the popes of the baroque era reinforced their importance. The artistic embellishments commissioned for the basilica by the popes were intended to augment the sense of the presence of the Holy Spirit, and to visually confirm the significance of martyrdom and relics.

In 1623, forty-two years after Montaigne's visit to Rome, Cardinal Maffeo Barberini was elected pope and took the name of Urban VIII to symbolize his determination to complete the rebuilding of Rome as the Catholic capital. The interior of St Peter's became the focus of his attention.

Several large altarpieces to be installed near the tomb of St Peter were commissioned from local painters; three of the paintings movingly illustrate the importance of relics and martyrdom to the basilica and to the Church's public policies.

The first painting portrays St Gregory and the miracle of the corporal. Gregory the Great, a major figure in medieval Church politics, was pope during the late 6th century, and author of modifications to the liturgy that first permitted the participation of the lay public in the celebration of the Mass. He was buried in St Peter's. The corporal is a white linen upon which the host and chalice are set during Mass. The painting illustrates the moment when Gregory shows a gathering of startled onlookers that a piece of linen that had touched an early Christian martyr bleeds when pierced with a knife. Gregory thus proves to his doubting audience that the linen had taken on the corporality of the martyr. The dove of the Holy Spirit invests the cloth with the miraculous force while Gregory holds the cloth before an altar in the basilica. The emphasis on the cloth alluded, no doubt, to the old practice of pilgrims of testing their faith by dropping small bits of cloth on Peter's grave. According to contemporary accounts, if their faith was sufficiently strong, "wonder of wonders, the cloth will be so rich with divine power that it weighs more heavily than before, and so they understand that they have received the grace for which they prayed".

Grace is invited by prayer and it is bestowed through martyred death. The second and third paintings also stress the value of blood by depicting gruesome martyrdoms of early Christians. St Erasmus was sentenced to death by evis-



The Martyrdom of St Erasmus, 1629, by Nicholas Poussin, oil on canvas (sketch), 320 x 186 cm

ceration in 303 when he refused to submit to pagan pleas to renounce his religion. In one painting the final moments of his life are portrayed; in the upper part of the composition two angels descend to bestow the martyr's palm frond and laurel wreath, symbols of divine recognition and blessing of his act.

The other painting depicts the martyrdom of Processus and Martinianus, the two Roman soldiers who were assigned to guard Peter in prison, and who let him escape. They were accepted as Christians because Peter had baptized them. Like Erasmus they refused to recant their new faith, and the palm is offered to them.

Blood drips from the paintings, which were installed so that they could be clearly seen above the altars during Mass. If the pictures seem excessive to the modern eye, it must be remembered that the early Christian saints and martyrs were witnesses, and thus represented beacons of strength to the faithful of the baroque age. The altarpieces were conceived as stirring testimonials to the Church militant and vivid reminders of the power of the faith.

The high altar, situated at ground level, marks the site of the tomb of St Peter, which is located under the basilica. This altar is used exclusively for papal celebrations. In 1624, Urban appointed Gianlorenzo Bernini, universally

The magnificent baldachin designed by Gian Lorenzo Bernini marks the tomb of St Peter and the high altar of the basilica.



recognized as the greatest Italian sculptor after Michelangelo, as chief designer of a tomb- and altar-marker that would fit appropriately into the colossal open space defined by the main dome of the basilica. The dome was designed by Michelangelo in the mid 16th century. Bernini conceived of a thirty-metrehigh gilded bronze canopy to serve the triple function of marking the grave site, covering the pope during his celebrations, and symbolically reaching out to encompass the sacred relics of the handkerchief and the lance tip, which were installed (with two other relics of the true cross and Saint Andrew's head) in the inner niches of the four massive piers that support the dome. This canopy is called the baldachin and is so named after a piece of church furniture that traditionally had been used to cover the pope, or relics, when they were paraded publicly.

The baldachin is a remarkable object that consists of four huge, twisted columns that support the canopy with its billowing pelmets and, above it, the crowning storey of angels with uplifting volutes topped by the traditional cross and orb. The entire monument is richly gold-leafed to produce the stunning effect, in natural daylight, of an incredibly rich temple situated directly over the tomb. This house of the apostle, sacred shrine, and treasury is the most spectacular interior decoration, and all visitors are irresistibly drawn to it.

According to tradition, Peter had been buried in an ornate bronze sarcophagus. Urban's decision to use costly materials for the baldachin was also affected by his determination to provide a permanent marker that would eternally proclaim the victory of Peter and his earthly successors and the triumph of Catholic life over death. Concurrently the pope intended the monument to pronounce his policy of the Church militant, for the columns were cast by the founders who were supplying, at the same time, eighty bronze cannon for the papal arsenal. The ornamentation of the tomb and the modernization of the arsenal were recognized by the pope as symbolic of the conquest of the infidel.

From the baldachin, the pope looks out at his congregation and sees, in the pier below the niche containing the handkerchief, a huge marble statue of Veronica, who holds her prize for the assembly to see. She rushes forward with it and, like the priest with the red gloves, waves it aloft above the heads of the throng below. Veronica is one of four colossal statues whose general designs were drawn up by Bernini in accordance with his grand plan for the area. Together they exhort the pilgrims to meditate on the relics and to recognize in the hallowed spot under the baldachin, the historical significance of these early defenders of the faith. Pope and pilgrim become one collective voice raised to honour the past as they pray for the future.

Urban wished to be buried in the basilica with his predecessors, and so he commissioned Bernini to design a tomb in the apse of the building. Bernini's creation shows the pope seated, giving the commanding gesture of benediction. His throne rests on a high base rising behind the richly decorated sarcophagus on which a skeletal figure of Death inscribes the pope's name in his book. To his left and right stand marble statues of Charity and Justice, who allegorically refer to the pope's earthly character. Visually the tomb is a riot of colour; the statues of the pope are gilded bronze, the sarcophagus is polychrome marble, and the two females with their companions are white, creamy marble.

The total effect is of a vision in which Urban publicly blesses the congregation from his place beyond death. Commentators of the 17th century noted that

Below left: This marble statue by Bernini is of Veronica holding her handkerchief for the assembly to see. The statue, which stands in St Peter's in the pier below the niche holding the relic of the handkerchief, is approximately three times greater than life size.

Below right: The tomb of Pope Urban VIII was designed by Bernini and is located in the apse of St Peter's Basilica.





this monument was a "great miracle of art" and was itself worth the trip to Rome. Yet in the context of Bernini's larger plans for the interior, it should be seen as a silent reminder of the pope's roles in the the decoration of the basilica and church politics during his twenty-year pontificate.

The great truth of martyrdom is that it definitively seals the Christian's life as one in conformity with Christ's, Christ is, by allusion, present in the decoration and stones of St Peter's; however, his life before the crucifixion is rarely the subject of the paintings and sculptures. One outstanding baroque exception is a small terracotta depicting the baptism of Christ that was made in the 1640s by Alessandro Algardi, Rome's other leading 17th-century sculptor. This three-dimensional sketch was intended as a preparatory study for a large cover of a new bronze baptismal font that was to be installed in the basilica during the pontificate of Innocent X, which followed that of Urban. But nothing came of the project, and therefore we have only this intimate representation of the beginning of Christ's ministry.

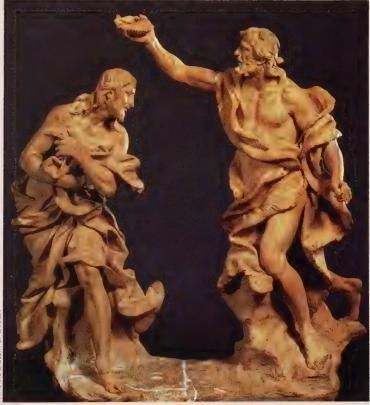
Bernini played out the final grand act of the baroque era during the rule of Pope Alexander VII (1655–1667). Although Alexander's commissions to Bernini were as numerous as those of Urban, it is very likely that the artist's last two monuments, the reliquary for the Cathedra Petri (Chair of Peter) and the piazza in front of St Peter's, reflected thoughts and initial plans that had been discussed earlier with Urban. Possibly Bernini's two most ambitious projects, they completed the artistic decoration of the basilica.

For many centuries the basilica had owned the wooden chair with ivory inlays that was accepted as the throne on which Peter sat and dispensed justice after he became the first bishop of Rome. Like other relics it had been displayed at certain times of the year. Alexander VII decided to have Bernini design a large sculptural complex as a new reliquary that would permit the chair to be continually on display to the public.

Set in the centre of the apse next to the tomb of Urban VIII, the enormous sculpture consists of a splendid gold-leafed bronze throne, which totally encloses the wooden chair. The gigantic throne appears to hover in the air, suspended by the slimmest threads that run from its splayed legs to the out-

Below left: The Baptism of Christ, 1645-46, by Alessandro Algardi, terracotta, 48.7 x 47.8 cm, Biblioteca Apostolica Vaticana, Museo Sacro,

Below right: One of Bernini's greatest achievements was the reliquary for the Cathedra Petri (Peter's Chair), which is set in the centre of the apse next to the tomb of Urban VIII in St Peter's Basilica.







The piazza in front of St Peter's Basilica was designed by Bernini to accommodate up to a quarter million visitors. When it was completed, the program to decorate the basilica came to an end.

stretched hands of four colossal standing figures—two of the Four Fathers of the Latin Church and two of the Four Fathers of the Greek Church. In fact the throne remains aloft, as the sculptor shows us, through the divine intervention of the dove of the Holy Spirit, which radiates the powerful light of God's grace as it flies through the oval window above the throne. An angelic chorus accompanies the dove.

From the entrance of the church, pope and pilgrim can see the Cathedra Petri framed by the baldachin. The entire vision underscores the symbolic presence of Peter through his relics and papal successors, and through the real presence of the Holy Spirit. It is the dove that animates and illuminates the entire interior, as it does in the St Gregory altarpiece, on the underside of the baldachin's canopy, and in the Cathedra. God's grace is here, the decoration proclaims. His wisdom and salvation resound within; glory to his name.

The piazza of St Peter's, commissioned in 1656, was designed to accommodate up to 250000 Romans and foreigners gathering for special ceremonies, especially the papal benediction given, then as now, *urbi et orbi* (to the city and to the world) on Easter Sunday.

Bernini's design consists of a huge oval-shaped piazza, which is framed by imposing one-storey colonnades. The artist himself likened the form of the piazza to the outstretched arms of the Church greeting the faithful. In his own words the piazza "receives Catholics in a maternal gesture in order to confirm their belief, heretics in order to reunite them with the Church, and infidels to reveal to them the true faith". The repetition of the oval shape of the window above Peter's throne in the shape of the piazza reinforces the idea of the eternal presence of the Holy Spirit inside and outside the basilica.

At the completion of these projects, criticisms were raised that are all too familiar in any major civic development. Accusations of financial extravagance were levelled; Bernini's creations for the Vatican would cost several tens of millions of dollars in today's currency. One raised voice noted: "The building of the colonnades which encircle the piazza of St Peter's will be an achievement to recall the greatness of ancient Rome. But it is true that Rome is getting more and more buildings and fewer and fewer inhabitants. This decrease is very striking and obvious to everyone." Another observer commented about extraordinary sums of money being spent "on a series of catastrophic mistakes".

The truth of the matter is that while the papacy was preoccupied with the embellishment of the Vatican, temporal power was shifting from Rome to Paris. By the 1660s, Louis XIV, the Sun King, could claim with justification that France was the predominant Catholic power; and so she remained until the Revolution of 1789. Louis and his advisers openly appropriated to his image of kingship, however, many of the visual ideas that had first been expressed in the masterpieces of baroque art in the Vatican. $\dot{\psi}$

W. Chandler Kirwin is associate professor in the Department of Fine Art, University of Guelph. Dr Kirwin is currently preparing a manuscript entitled O Powers Matchless: Bernini and the Arts of Art and War, which will be published by The Vatican Press.

Vatican Splendour: Masterpieces of Baroque Art was organized for the National Gallery of Canada by Catherine Johnston, curator of European Art. This exhibition has been made possible by generous grants from Northern Telecom Limited and Alitalia. The exhibition is on display at the Art Gallery of Ontario until 30 November. It will be on display at the Montreal Museum of Fine Arts 18 December 1986 until 15 February 1987.







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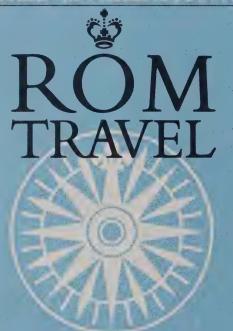
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Providential Delays and the Nobility of Rot

Making the best of a bad situation has had special meaning in the history of winemaking.

Barbara D. Ritchie

A traditional wine press



BEHIND every good wine there is a story. Some of the best tales come from the monasteries of Europe where many wine-making techniques were discovered. Monks producing wine on a commercial scale used the money they earned through sales to buy and maintain secular property. Wine was also used as a medicament for the sick and the elderly in the monastery hospitals. Because of the substantial wealth gained through viniculture, monasteries have had an important role in the development of wine-making.

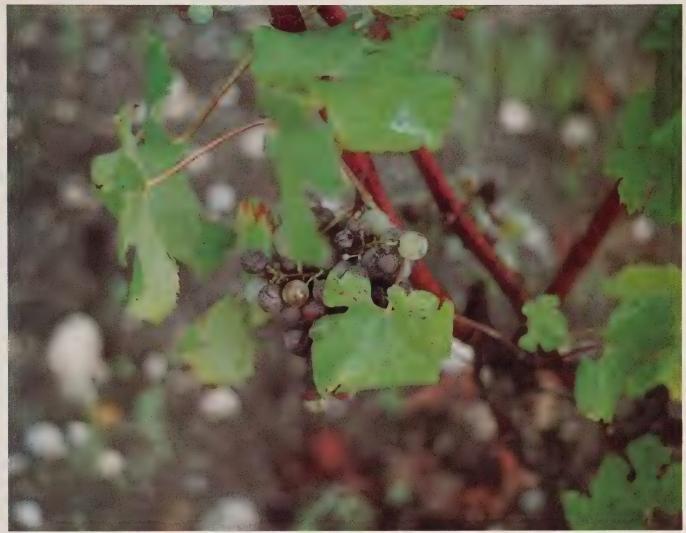
In A.D. 350, at Tours in the Loire Valley of France, St Martin is reputed to have recognized and documented the value of pruning the vines. One day early in the season, he noticed that his donkeys, while tethered to a vine post, were munching on grape clusters from vines within their reach. At the time of harvest, to his surprise, he discovered that the remaining grape clusters on those particular vines had grown to be bigger and richer in natural sweetness than grapes on other vines. From this observation came the process of pruning the vines to improve the quality of the yield.

The use of a cork stopper is credited to Dom Perignon, the renowned monk from the Champagne district of France. During his sojourn in Catalonia, Spain, he noticed that Spanish pilgrims used large pieces of cork to seal their gourds. He brought this idea back to France. Prior to his discovery, French wine had been protected from exposure to oxygen by floating a layer of oil on the surface of the wine in the vat, or by placing oil-soaked hemp on top of the wine barrel.

The myriad of wines we see today have evolved from countless experiments, some of which created extraordinary successes from potential disasters. Such was the discovery of *Botrytis cinerea* or noble rot. This is the name for the bacteria or mould which attacks certain ripe grapes when conditions of temperature and humidity are favourable, causing the grapes to shrivel to a horrible sight. However as the grapes wither, their water content is reduced, thereby concentrating the natural sugars in the grape. When pressed, the fermented must (grape juice) yields a rich, golden-coloured dessert wine with an intensity of flavour and complexity.

First discovered in Hungary in the mid-16th century, where it is known as *Aszu*, *Botrytis cinerea* is responsible for the famous dessert wine, *Tokay Aszu*, produced in the northwestern part of the country. As legend has it, a local war delayed the harvesting of grapes in the region. When the soldiers returned to their vineyards after the battle, they found the grapes covered in mould. Despite this, they went ahead with the harvest, and proceeded to vinify the grape juice. The results were magnificent—a new wine style was born.

Nearly a century later in Germany, the beneficial effects of this mould, or *Edelfaüle*, as it is called in German, were also discovered by accident. In 1755, at the world-renowned estate of Schloss Johannisberg, in the Rheingau region,



permission to commence the harvest issued from the Prince-Abbot of Fulda, the reigning prince of the Church, arrived late, because of a slow courier. Much to the dismay of the awaiting monks, the grapes had shrivelled and were rotting on the vine. Rather than lose the crop, they decided to harvest the grapes. Once again, the resulting wine was superb. On 10 April 1776, the administrator of the estate recorded, "I have never tasted such a wine before." This marked the beginning of the Beerenauslese and Trockenbeerenauslese wines for which Germany is so famous. An equestrian statue of the tardy messenger was erected in front of the Schloss Johannisberg estate to commemorate this legendary event.

In much the same way, through a providential delay, *Botrytis cinerea*, known as *pourriture noble* in France, was discovered in the Sauternes district of Bordeaux. According to the story, in the fall of 1847, the Comte de Lur-Saluces, owner of the famous Chateau d'Yquem, was delayed during his return from Russia to his estate. As was customary in those days, the harvesters were obliged to wait for his approval before picking the grapes. By the time his approval was received it was so late in the year that most of the grapes were overripe and completely contaminated with rot. Nevertheless, they were harvested, and the wine that was produced was of such excellent quality that its fame quickly spread. It was the forerunner of the famous Sauterne wines of today.

The keeping qualities of late-harvested, botrytized wines are commensurate with their richness. In the Bibliotheca subterranea of the Schloss Johannisberg estate, old wines dating as far back as the 1770s are preserved. When a sampling of the best wines in the collection was conducted in 1976, even some of the oldest wines were found to be quite drinkable, while some of the 19th-century wines were still in sound condition.

These semillon grapes are covered with *Botrytis cinerea*, the mould more popularly known as noble rot. Sauterne, the delicious French dessert wine, is produced from these unsavoury looking grapes.

A view of the vineyards of the Schloss Johannisberg estate



The reason for such longevity is that *Botrytis cinerea* metabolizes more acids than sugar as it interacts with the grape on the vine. Furthermore, the mould produces glycerine, which imparts richness and texture to the wine, thereby giving it tremendous aging potential.

There is another mould which can claim responsibility for the outstanding stability of wines produced at the Schloss Johannisberg estate. *Clodosporium cellare* is a fungus that grows on the walls of the cellars. There, it helps to create an ideal atmosphere of temperature and humidity for the maturation process of the wines.

Having recognized the beneficial effects of *Botrytis cinerea* on certain grapes, wine-makers were quick to make use of this discovery. However, there are considerable risks involved in delaying the harvest to encourage the growth of this mould. If the autumn is rainy, or a hailstorm occurs, the entire harvest could be lost. A series of cool evenings, followed by early morning mist and warm, sunny days is the ideal set of conditions for nurturing *Botrytis cinerea*. Cold, damp weather conditions without a drying-out period during the day can lead to the growth of *pourriture gris*, otherwise known as grey rot. This mould renders the wine bitter and undrinkable. At Chateau d'Yquem, unfavourable weather conditions caused the loss of the entire harvest in 1930, 1951, 1952, and 1964.

In 1858, in the Rheingau district of Germany, the risky business of late-harvested wines resulted in a further development in the history of *Botrytis cinerea*. That year, the harvest was delayed too long, and frost struck the vineyards. The fully ripened botrytized grapes became frozen on the vine. Yet when pressed and fermented, they yielded a luscious dessert wine, even more highly concentrated in natural sugars, acids, and flavours, which became known as *eiswein* or icewine.

Today *eiswein* is produced in Germany, Austria, Switzerland, and Canada. Harvesting the frozen bunches of grapes ideally takes place during the early morning hours before the sun has a chance to melt the ice. Approximately eighty per cent of the pressing is still ice. The remaining twenty per cent is a highly concentrated quantity of superb grape juice. *Eiswein* can only be made when appropriate climatic conditions prevail, and only miniscule quantities are produced from any harvest. The first Canadian *eiswein* was produced by Inniskillin in Ontario's Niagara region. Ontario's climate is similar to that of the Rheingau region of Germany. Total production of the 1984 Vidal Eiswein was a mere nine hundred bottles (375ml).

Since its fortuitous discovery, *Botrytis cinerea* has been used effectively by wine-makers to bring forth a vast array of golden sweet dessert wines. Bacchus would agree that they are truly the "nectar of the gods". Isn't it nice to know that rotten luck isn't always bad luck.

Barbara D. Ritchie is a wine consultant and writer.



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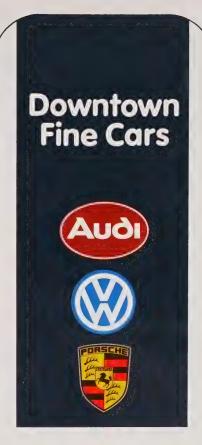


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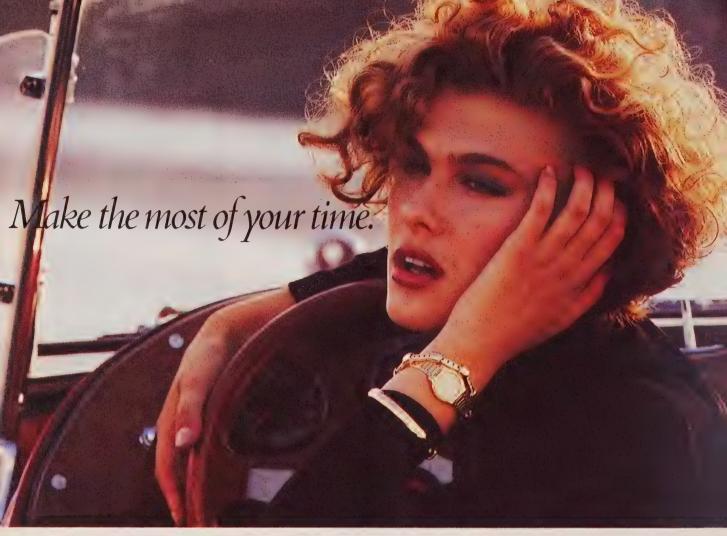


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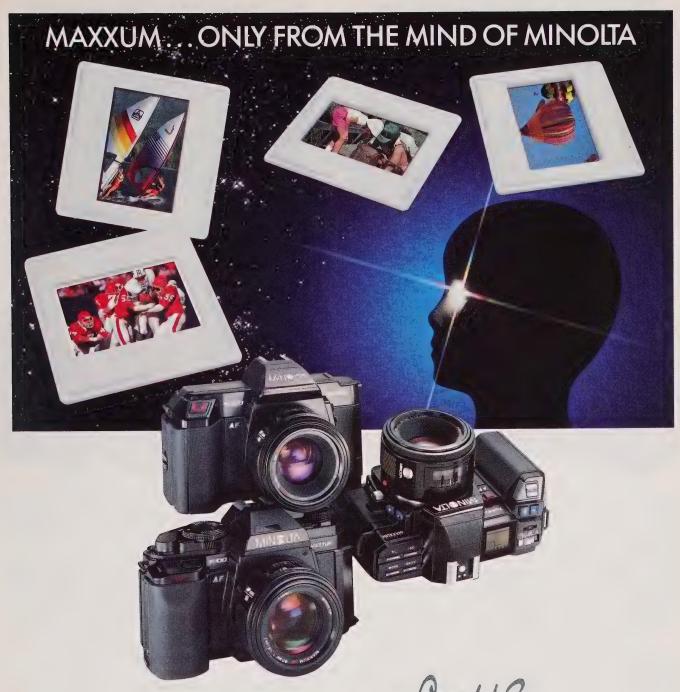
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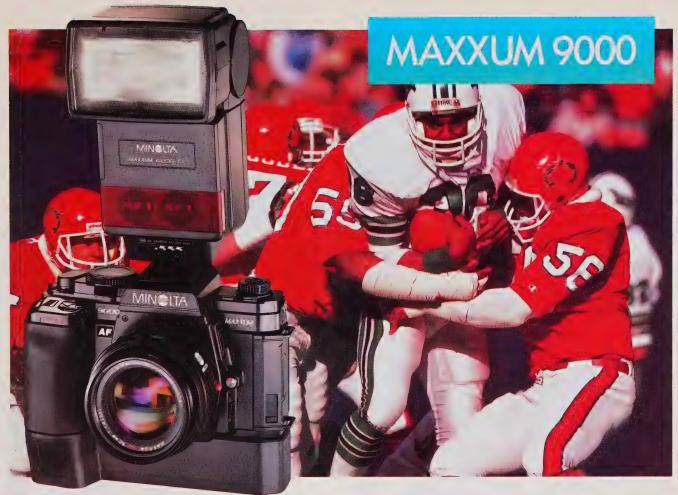
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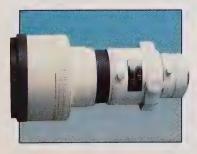
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THE SLY HUMOUR OF MANNERISTART

In a Manner of Speaking

Was nothing sacred? Deciphering the cryptic humour of the Italian mannerists exposes a very private faction in a very public culture.

Jill Finsten

ANNERIST art has not enjoyed a very good press. This quirky style had the misfortune of falling between the two most glorious periods of Italian art: the High Renaissance (1490–1520) and the baroque (c. 1600–1700). Critics since the 17th century have deplored it as either decadent or inept, and it is only in this century that the style has finally found its champions. German critics, in the 1920s, were the first to respond positively to the excesses and strangeness of mannerism, which they saw as an anguished response either to the giants of the High Renaissance—what can you do to top Michelangelo?—or to the political and religious upheavals of the period, the most overtly traumatic being the Sack of Rome in 1527 by the mercenaries of Emperor Charles V.

These critics of the early 20th century, conditioned by the art of German expressionism, saw mannerism as an artistic parallel from an earlier, but in many ways similar, period in history. As recently as 1985, Frederick Hartt, the American author of one of the most frequently used art history textbooks, described mannerism as neurotic and deeply disturbed—a description often applied to German expressionism.

As is often the case, these descriptions tell us at least as much about the writers and their times as about the artistic style under discussion. In this respect, one could say that the history of taste is a kind of cultural Rorschach test: a long-forgotten style or artist is rehabilitated by a later age in which a responsive chord is struck. In the first half of the 20th century, the spiritually intense art of a Pontormo or an El Greco became not only acceptable but was seen as prophetic of the equally intense art of the German expressionists. Dada and surrealism, two other 20th-century art movements whose artists included Marcel Duchamp, Salvador Dali, and René Magritte, among others, with their emphasis on the irrational, also facilitated an appreciation of mannerism, which also was perceived as anti-rational.

And, indeed, the Pontormo *Deposition* (c. 1526) in the Church of Santa Felicità, Florence, represents one type of mannerist style. In this painting, the elongated bodies, illogically compressed space, unnatural colours, and anguished or other-worldly facial expressions suggest an intensity of spiritual communication that is in direct opposition to the ideals of the High Renaissance.

Opposite page: Allegory or *Venus, Cupid, Folly, and Time,* 1542–45, by Agnolo Bronzino, oil on panel, 146 x 116 cm, National Gallery, London



Leonardo, Michelangelo, and Raphael, the masters of the High Renaissance, created in their work a rational, harmonious world inhabited by a race of noble, dignified beings. The ideal of human perfectibility embodied in the work of these artists was and still is thought to have created a Christian equivalent to rival the achievement of the golden age of Periclean Greece.

Michelangelo's *Pietà* is a perfect example of classical decorum: the Madonna's restrained, dignified bearing and simple gesture combined with her superhuman beauty indicate to the viewer that one is in the presence of gods. Not surprisingly, the clarity and perfection of this so-called classical style did not lend itself to displays of emotion. In this context, the desire of artists like Pontormo and El Greco for a more intensely emotional spirituality may be seen as a reaction against the classicism of the High Renaissance.

But there is a second type of mannerism whose qualities appeal to the post-modernist tastes of the 1980s. It too could be described as a reaction against High Renaissance classicism, but for very different reasons and in a quite different way. This second type of mannerism has been called *maniera*, which is the Italian word for style. *Maniera* is not intense and other-worldly. On the contrary, it is sophisticated, ironic, and very worldly. The two major *maniera* artists were Agnolo Bronzino and Francesco Parmigianino. In several of their most important works of the 1530s and 1540s, style has virtually become an end in itself.

Style as one's main or only purpose was by no means an irrelevant concept to the High Renaissance. Baldassare Castiglione's *Courtier* was the written guide to the expression of personal style: the perfect courtier had *sprezzatura*, what we would call offhand elegance. Raphael, in a famous swipe at Gothic architecture, described it as *senza maniera alcuna*, which means without any style whatsoever. But in Raphael's work, as in Michelangelo's, style is a means to an end, that end being invariably one that is morally and spiritually uplifting. The *maniera* artists found this kind of highmindedness amusing.

Bronzino's painting *Pygmalion and Galatea*, which once hung in the Palazzo Barberini, is a little-known work probably dating from the mid-1530s when the artist had only recently emerged from Pontormo's work-

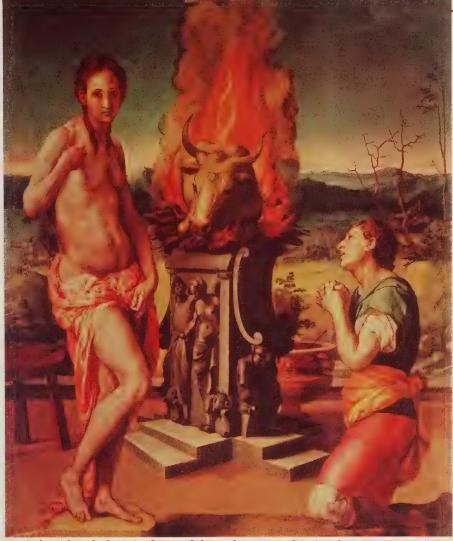
shop. It is an early indication of the artist's distinctive use of irony. The painting recounts Ovid's tale of Pygmalion, a Cypriot sculptor so enamoured of his own work, a statue of Venus, that he prayed to the goddess that he might have a wife as beautiful. Venus granted his wish by making the statue come to life.

Bronzino depicts the very moment when Pygmalion falls to his knees in wonder as the sculpture becomes flesh and blood. Galatea (as she came to be named) fixes us with a rather baleful eye. Her pose, apparently that of the classical Venus pudica (chaste Venus), is in fact a mirror image of Michelangelo's famous *David*. This accounts for the strange position of her right hand (the left hand of the *David* holds the slingshot) and for the odd angle of her left hand.

Once Bronzino's Galatea is understood as a female *David*, then the sculptor worshipping his own creation must be Michelangelo. The golden calf blazing in the background is a less than subtle mock admonition against worshipping idols. The painting is indeed a sly joke that pokes fun at the idolatry accorded Michelangelo's revered sculpture, which, since its execution in 1501, had oc-



Deposition, c. 1526, by Jacopo Pontormo, oil on panel, 312 x 193 cm, Cappori Chapel, Santa Felicità, Florence.



cupied pride-of-place in front of the Palazzo Vecchio in Florence (Bronzino's hometown). In a much nastier vein, it alludes to Michelangelo's sublimated homosexuality. Michelangelo was still very much alive in the 1530s; he lived until 1564. He was revered as an artist, and he was often addressed as *divino*. He was also a very devout man. Thus in many ways the allusion to the worship of false gods was pointed and altogether mean.

We don't know for whom the *Pygmalion and Galatea* was painted. But Bronzino's most famous painting, the so-called *Allegory* or *Venus, Cupid, Folly, and Time* (c. 1545) in the National Gallery, London, was painted for Cosimo de' Medici, Duke of Florence, and it too is a witty and wicked satire of Michelangelo—evidently a highly prized one, for Cosimo eventually gave it to François I of France.

Cosimo's court was a hotbed of *maniera* sophistication. His taste in humour ran to the bawdy and vulgar, but it was invariably couched in elegant language. It would be fair to say that one of the central themes in this courtly circle was the amusing contrast between refined appearances and vulgar practices. The apposite literary work was Giovanni della Casa's *Galateo*, a parody of Castiglione's *Courtier*, which offered humorous advice about correct behaviour. For example there is this helpful hint: "When you have blown your nose, you should not open your handkerchief and inspect it as though pearls and rubies had dropped out of your skull."

Bronzino's *Allegory* is the painted counterpart to this kind of wit: it is a cynical little essay on the pitfalls of love. In this painting we see Venus and her son Cupid engaged in an incestuous embrace, surrounded by the following figures: Father Time (upper right), who exposes them by pulling back the



Above left: Pygmalion and Galatea, c. 1535, by Agnolo Bronzino, present whereabouts unknown.

Above right: David, 1501, by Michelangelo Buonarroti, marble, 442 cm, Accademia, Florence.





Top: Holy Family (The Doni Tondo), 1503–05, by Michelangelo Buonarroti, tempera on panel, 120 cm diameter, Uffizi Gallery, Florence.

Bottom: Allegory by Bronzino (see page 39).

curtain; Folly and Jealousy (left), who gnashes her teeth; Play (right) who prepares to throw rosebuds at the lovers; Pleasure (behind Play), a lovely little girl with a serpent's body, who proffers with her left hand a honeycomb and conceals with her right hand a poisonous little animal. In the lower right corner, the two masks provide the key to one level of meaning: appearances deceive. These coldly elegant figures are involved in a scene of incest and deceit. The lovers' embrace obscures the fact that Venus is stealing one of Cupid's arrows while he prepares to pinch her crown. So the lovers deceive even each other.

The painting is actually much more jauntily wicked. It does more than subvert the Platonic notion of Venus, embodied for all time in Botticelli's *The Birth of Venus* (1480), itself a Medici commission from an earlier, more innocent time when Venus was the eternal virgin. Bronzino has even impugned the virtue of the Holy Family by posing the flattened mother and son in a parody of Michelangelo's Doni *Holy Family*, with Father Time playing the role of Joseph. This little bit of blasphemous naughtiness would have been perfect to titillate the palates of an aristocracy that had long ceased to believe in much of anything except its own pleasure. Even the marmoreal quality of the figures is a pun: where Botticelli has earnestly paraphrased the sculptural Venus-type of antiquity in the chalky pallor of his figure, Bronzino's protagonists are illusions of "real" sculptures that have come to life, a conundrum which relates back to the original theme of appearances deceiving. Its literalness also mocks the Renaissance ideal in painting of making sculptural figures.

It's all terribly clever. And of course much of the fun consists in the audience's participation in peeling away the various layers of meaning and references to other works of art.

Probably the most elegant in-joke of this type is Parmigianino's *Madonna with the Long Neck* (c. 1535) in the Uffizi Gallery. It is the epitome of *maniera* artificiality. The painting has resisted attempts to decipher its several puzzling aspects—the surrealistic Doric columns and Lilliputian announcer in the right background continue to defy rational explanation. The Madonna, too, is a puzzle. Despite her pretty pose and rarefied beauty, she is distinctly odd—the long neck already singled out for notice, as well as her spidery fingers, illogical height, and non-existent lap off which the bulbous and bald child must inevitably slither.

These ambiguities are disconcerting. Is the Christ child asleep or dead? Why is he so long and ovoid in shape? Are those attendants angels? If so, why is one of them holding an amphora, the one in the middle rudely staring down at the child's privates, and the one furthest back looking out mischievously to us? The figure beside the Madonna looks like her daughter, but it is a standard *maniera* joke to give several characters in a painting the same face. By calling attention to the fact that these paintings are by no means expressions



Birth of Venus, c. 1480, by Sandro Botticelli, oil on canvas, 175 x 279 cm, Uffizi Gallery, Florence.



Above: Pietà, c. 1498–1500, by Michelangelo Buonarroti, marble, 174 cm, St Peter's Basilica, Rome. Left: Madonna with the Long Neck, c. 1535, by Francesco Parmigianino, 216 cm x 132 cm, Uffizi Gallery, Florence.

of reality but rather artifice, the *maniera* artists were expressing an attitude that we would associate more with 20th-century abstraction.

It is on this purely aesthetic level that the painting is a parody of Michelangelo's *Pietà*. The *Pietà* may be described as an illusionistic sleight of hand. The Madonna is disproportionately large in relation to her child: if she stood up, she would be seven feet tall. This distortion was intentional for it was needed to create the perfect High Renaissance balanced, triangular composition, and a mood of calm grandeur. Parmigianino made the distortion literal in his painting: the Madonna *is* seven feet tall, and she *is* standing up, which is why she has no lap and why the child is so precariously perched. The child is posed as a mirror image of Michelangelo's dead Christ.

Even the odd spheroid shape of the child's body is an artistic in-joke, this time at Raphael's expense. Raphael's pudgy *bambini*, like the ones in the



Above: Madonna of the Goldfinch, c. 1505, by Raphael Sanzio, Uffizi Gallery, Florence.

Right: Madonna of the Rose, c. 1528–30, by Francesco Parmigianino, Gemaldegalerie, Dresden.



Madonna of the Goldfinch, (c. 1505), which hangs in the Uffizi, typify a perfect High Renaissance balance between the natural world and a geometrically purified one. In fact, several of Raphael's preparatory drawings from about 1505 consist exclusively of intersecting circles. Once again, Parmigianino is being subversive by being literal.

Ultimately it is the earnestness of the High Renaissance that was being tweaked. One does, however, sympathize with poor Elena Baiardi, who commissioned the painting for her chapel in Santa Maria dei Servi and who did not accept it. The painting remained in the artist's studio until his death. Obviously this kind of humour isn't to everyone's taste, particularly when it concerns holy subjects.

What then to make of Parmigianino's *Madonna of the Rose* (c. 1528–30), now in Dresden? This disconcerting object, at once exquisite and blasphemous, was originally commissioned by Pietro Aretino, the well-known scandal-monger and libertine. However, when Pope Clement VII came to Bologna in 1530 the painting was given to him instead! Apparently the Pope could take a joke better than Elena Baiardi. But then he was a Medici.

It is not surprising that these *maniera jeux d'esprit* should appeal to 1980s' sensibilities. Irony, detachment, and witty quotations from an earlier time delight the Trivial Pursuit generation, which is often described as taking nothing seriously and therefore accused of being shallow (all style and no content). We live in an age particularly suited to appreciate this most stylish of styles. Like the world of the mannerists, our world is far too serious to take seriously.

Jill Finsten is a lecturer in the Cultural Studies program, Trent University.



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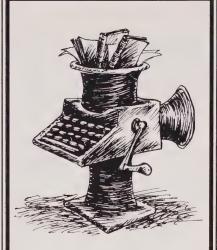


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A CHINESE ARCADIA OF EUROPEAN DESIGN

The Art of Chinoiserie Textiles

As part of the craze for all things oriental, chinoiserie textiles were used to create the trendiest decors in the homes of wealthy Europeans of the 17th and 18th centuries.



Brigitta Schmedding

Top: Valance, French, second half of the 18th century, made from a larger piece of satin silk embroidered with silk yarns in satin stitch and French knots, 28 x 193 cm. collection of the ROM.

Centre: Wall hanging from the first Tenture Chinoise, French, Manufacture Royale de Beauvais, early 18th century, tapestry weave, 350 x 450 cm, collection of the Wuerttemberg. Landesmuseum, Stuttgart.

LLUSTRATED books by Jesuit missionaries and other travellers to the Far East in the 17th century created in the minds of 18th-century Europeans an image of a Chinese Arcadia. For those searching for a vision of paradise, China became an idyllic land ruled by a wise emperor whose peaceful subjects basked in the comforts of an exuberant lifestyle. As these fanciful ideas gained popularity, the highly ornamental rococo style was emerging coincidentally in the decorative and fine arts of Europe. The natural affinity between the Chinese imagery and the rococo style led to the creation of rococo chinoiserie: decoration illustrated with scenes of Chinese life. Porcelain plates, cups and containers, furniture, textile furnishings, and English silverware were all adorned with chinoiserie motifs.

Amongst the earliest and finest examples of chinoiserie textiles are two sets of figurative, tapestry wall-hangings woven in the Beauvais factory of France depicting the Chinese emperor's activities. Silks were used for wall panels in



Left: Ornamental design from Cahier de petits ornements et figures chinoises. Inventée et dessinée par J. Pillement premier Peintre du Roi de Pologne, published in Paris, in 1773, etching, impression on paper, 24.5 x 19 cm, collection of the

Above: Curtain, French, Nantes (?), about 1780, linen and cotton tabby, woodblock printed, 303 x 80.5 cm, collection of the ROM.

The chinoiserie motif in the vignette printed between the columnlike stripes was taken from the design illustrated in

the many chateaux of France, Italy, and Germany, and even the intricate patterns of lace sometimes included small chinoiserie elements; however, cotton grounds were undoubtedly the most suitable for displaying entire chinoiserie scenes.

Europeans learned colour-fast printing of fabrics after seeing the Indian chintzes that the East Indian companies started to import in the early 17th century. By the end of the century, printworks were active across Europe. Although one might easily assume that Chinese textiles coming to Europe via the trade routes were the models for the European textiles, this was not the case. Even other Chinese artifacts rarely served as the sources for textile design. Most designers consulted collections of oriental ornament motifs, published in Europe, in order to create their own patterns. These collections in turn owe their origins to the craze for all things oriental that swept through Europe in the 17th and 18th centuries. The books of motifs enabled European

Below left: Furnishing fabric, English, Bromley Hall of Poplar, Middlesex, last quarter of the 18th century, cotton tabby, copperplate printed, 190 x 71 cm, collection of the ROM.

In the Bromley Hall pattern book from the 18th century, in the collection of the Victoria and Albert Museum in London, the design of this textile is called "Pagoda". The fisherman and three other single motifs are taken from Edwards and Darly's A New Book of Chinese Designs . . . , London, 1754.

Below right: Furnishing fabric, English or French, last quarter of the 18th century, cotton tabby, copperplate printed, 101 cm x 67 cm, collection of the ROM. The pattern on this fabric is a copy of the Bromley Hall "Pagoda".

manufacturers to enhance their incomes and their place in the market by producing imitation goods to compete with the originals being shipped from the East.

One source for a textile pattern belongs to the Textile Department of the ROM. It is a single page from a booklet entitled *Cahier de petits ornements et figures chinoises. Inventée et dessinée par J. Pillement premier Peintre du Roi de Pologne*, published in Paris, in 1773. Jean Pillement (1728–1808), the son of a silk designer from Lyons, was a painter and decorator. Some of his ornament designs were first included in *The Ladies' Amusement* published in London, in 1758, by Robert Sayer. Part of the preface to this collection states that "with Chinese subjects greater liberties may be taken, because Luxuriance of Fancy recommends their productions more than Propriety, for in them is often seen a Butterfly supporting an Elephant, or Things equally absurd".

Pillement's chinoiseries were much sought after, for they were considered the most imaginative and delightful. His two-wheeled cart drawn by flying birds is a fantastic and whimsical motif that was chosen to decorate a French printed cotton, also in the Museum's collection. The cotton design adds a neo-classical touch: stripes resembling fluted columns, and a very symmetrical architectural frame around the vignette.

Chinoiserie textiles themselves were also the source for new designs. A redprinted cotton furnishing textile of the Bromley Hall factory in England was copied in sepia by another English or possibly French printworks. Its pattern, known as Pagoda, is preserved in an 18th-century pattern book from that factory. The drawing style and scale of the sepia print are different, but the motifs and their arrangement are the same as the Bromley Hall textile.





At least two other versions are known of the splendid deep-violet patterns on an 18th-century bedspread in the collection of the ROM. The spread was made for a French-style bed referred to as à la polonaise. The mood of the four major scenes, each set on a small island, is that of quiet living in the surroundings of beautiful landscapes punctuated by architectural structures. Ladies are sipping tea, children are playing, and others are conversing and promenading. A greater than usual variety of chinoiserie motifs are included in the overall composition. The motifs, printed in reverse and in red, are found on a cotton from the famous Oberkampf factory at Jouy-en-Josas in France. The ROM textile, like the one from Oberkampf, is printed from copper plates. A fragment of another textile in the collection of the Royal Ontario Museum shows the 1785, cotton tabby, copperplate printed, 102 x 93 cm, Harry Wearne Collection,

This is a copy, with the pattern reversed, of a cotton printed by the Ober-

Above: Fragment of a curtain, French, Nantes (?), about 1790, cotton tabby, woodblock printed, 67 x 60 cm, Harry Wearne Collection, ROM. Gift of Mrs

motifs, the pattern on this curtain is the same as the pattern on the bedspread.



Right: A detail of the ROM bedspread showing the figures who are conversing. Above: Furnishing fabric, detail, French, Oberkampf Manufactory, Jouy-en-Josas, about 1792, cotton tabby, copperplate printed, 185 cm x 129 cm, Biver Collection, Musée Oberkampf, Jouy-en-Josas. Gift of Miss Biver.

The pattern on this textile probably served as the model for the curtain fragment and bedspread in the collection of the ROM.



same figures but variations in the plant motifs; this textile was printed by woodblock, a technique that permitted polychromatic imagery.

Is one of the textiles the original and are the other two copies, or are all three textiles derived from another common source? There are no definite answers to these questions but several points may be considered. Copperplate printing in one colour permits a much finer and richer design with subtler shading than multi-colour woodblock printing. As the copperplate technique was considered superior, it is unlikely that the woodblock-print textile served as a model. The Oberkampf design is more elaborate and refined, especially in the modelling of the faces and the dresses, than the copperplate-printed textile in the ROM collection. It therefore seems probable that the finer textile is the original, and this view is further supported by another consideration—the gestures of the figures.

For most Western peoples, it is more natural for a person to point out something with the right hand while touching the person that is being addressed with the left hand. It is also more natural to pour tea with the right hand. The figures in the Oberkampf print follow these conventions, which means that the engraver had to reverse the images when preparing the copperplates for printing. The figures on the ROM plate-printed textile are, however, mirror images. The engraver probably copied the original motifs onto his plate and neglected to reverse them.

Whether inspired by European books of ornament designs, Chinese objects, or other chinoiserie textiles, the rococo chinoiserie that decorated the interiors and furnishings of 18th-century buildings remains as pleasing to our eyes as to the eyes of those fortunate enough to have lived in such surroundings.

Brigitta Schmedding is associate curator in the Textile Department, ROM.

THE GREAT ANOMALOCARIS MYSTERY

How a Shrimp Became the World's First Monster

Desmond Collins



There are seemingly endless mysteries to unravel about the 530-million-year-old fossils of the Burgess shale.

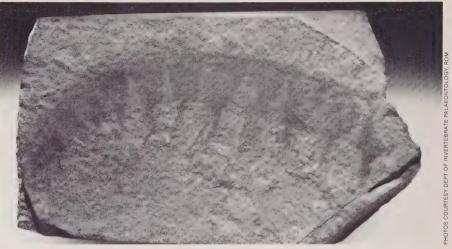
THE world's best detectives are forensic scientists and museum palaeontologists. Give them a clue or a fossil, no matter how non-descript and insignificant, and they will usually come up with something of interest about it. Give them a clue or a fossil with identifiable features and they will overwhelm you with facts and figures, backed up with comparable specimens from the collections and references from

the library. And yet there are the great mysteries. In Canada, one of the greatest, which began with two small fossils, has just been solved after one hundred years. It was the mystery of the *Anomalocaris*.

The story begins in 1886, along the Canadian Pacific Railway at Field, British Columbia, in the Canadian Rockies. Otto Klotz, a topographic surveyor from Preston, Ontario, was asked by the Depart-

Artist's conception of the two species of *Anomalocaris* attacking trilobites. *Anomalocaris canadensis*, shown grasping a trilobite on the sea bottom, uses the shrimplike appendages first discovered by McConnell in 1886. *Anomalocaris nathorsti*, shown rearing for a renewed attack, bears grasping claws that were originally attached to *Sidneyia* by Walcott, in 1911.

This is the original specimen of *Anomalocaris canadensis* collected by R. G. McConnell in September 1886. The misinterpretation of this eight-centimetre-long fossil began a century-long comedy of errors by some of the world's leading palaeontologists.



ment of the Interior to establish the longitude and latitude of points along the route of the CPR. He chose Field as one point because he could use the CPR telegraph to synchronize his astronomical observations with Kamloops, further west, the last point for which he had established co-ordinates. Klotz noted in his diary that the CPR was building a \$20000 tourist hotel in Field. In their off-time some of the carpenters had climbed up Mt Stephen, behind the hotel, and found "stone bugs" (trilobites), which they showed to Klotz. Klotz passed on this information to R. G. McConnell, a geologist from the Geological Survey of Canada, who was in Field mapping the geology along the CPR route.

At some time on 11, 12, or 13 September, McConnell climbed Mt Stephen and discovered the famous trilobite beds. Included in the fossils that he collected that day were the first two specimens of our mystery animal known to science. At this point, Klotz and McConnell leave the story. McConnell went on to complete one of the longest geological explorations of the Yukon Territory, and later he became director of the Geological Survey of Canada and Deputy Minister of Mines. Klotz worked on the Alaska Boundary Com-





mission, completed the first longitudinal girdle of the Earth, and eventually became Dominion Astronomer.

Five years later, in 1891, Henry Ami of the Geological Survey of Canada made a much larger collection from the Mt Stephen trilobite beds, including two slabs, one containing fourteen and the other twenty specimens of the mystery animal. J. F. Whiteaves, his senior colleague at the GSC, described the specimens in the October 1892 issue of the *Canadian Record of Science* as "a new genus and species of Phyllocarid Crustacea", naming it *Anomalocaris* (from the Greek, meaning "unlike other shrimps") *canadensis*. He provided an outline drawing of the species, probably based on one of McConnell's specimens, which were presumed to be lacking heads and therefore incomplete. *Anomalocaris* thus began its life in the scientific literature as the headless body of a shrimp.

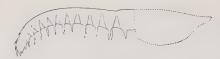
The next palaeontologist to try his hand at interpreting *Anomalocaris* was Henry Woodward, Keeper of the Geological Department of the British Museum. Woodward studied the collection from Mt Stephen made in the summer of 1901 by Edward Whymper, a celebrated mountaineer and travel writer who was also known as the "Conqueror of the Matterhorn". The dominion government was planning to designate the area centred on Field a national park, and so the CPR had contracted Whymper to investigate the tourist potential of the area. He was supposed to climb mountains, and open up trails, as well as publicize the Rockies and the CPR by writing favourably about them in newspapers and periodicals. Whymper had devoted an "afternoon divertissement" to his excursion to the Mt Stephen trilobite beds. Unaware that the fossils had already been described by Whiteaves and others, he made a collection "expressly for scientific purposes", hoping to write about finding the remains of primordial sea creatures at such a great elevation in the mountains.

Whymper exhibited his specimens and photographs at the Royal Society soirée of 18 June 1902, including a slab that was labelled "a very ancient shrimp from British Columbia". Evidently he was referring to *Anomalocaris*. He described his discovery of the slab in a letter to Woodward: "On the spot I considered it a catch, and tried to get more, but was unable—it was the only example we obtained. It appears to be the only Shrimp that was not eaten by the Trilobites, and to be the progenitor of the fine shrimps which are now found on the Pacific Coast."

Woodward, unsatisfied with the previously published data of the Mt Stephen fossils, refigured the trilobites and *Anomalocaris*. His outline drawing of the mystery animal included a "conjectural anterior part of the carapace", the first published attempt to give *Anomalocaris* a head.

The discovery of the Burgess shale in August 1910 by Charles Doolittle Walcott is the most significant event in the story. Walcott, the Secretary of the Smithsonian Institution in Washington, D.C., was the greatest living authority on rocks and fossils of the Cambrian period. He had collected from the Mt Stephen trilobite beds in 1907, and was looking for similar fossils on Mt Wapta in late August 1909 when he came across a loose slab of Burgess shale fossils on the trail. Walcott excavated the Burgess shale over five seasons between 1910 and 1917, and collected over 65000 specimens. In retrospect, it can now be seen that Walcott's contribution to solving the mystery of *Anomalocaris* was to add most of the evidence in the form of many new fossils. However, by referring the new fossils to known groups he made it seem that there was no mystery except that *Anomalocaris* still lacked a head.

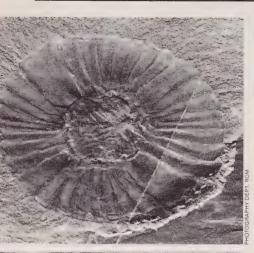
Walcott began to publish descriptions of fossils from his new find in 1911. The first species named was *Sidneyia inexpectans*, a large (seventeen centimetres in length) lobsterlike animal. Walcott associated several large claws, found separately, with *Sidneyia*, presumably because *Sidneyia* was the largest animal in the Burgess shale to which the claws could conceivably belong. He called *Sidneyia* "the king of the animal world in its day" in a 1911 article published in *National Geographic Magazine*. Lancaster Burling, Walcott's first assistant, subsequently figured *Sidneyia* with the large claws in place in the October 1917 issue of the *Ottawa Naturalist*.

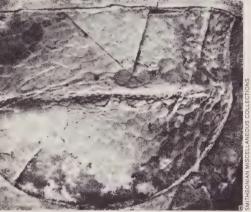


Woodward's reconstruction of *Anomalocaris canadensis* published in the *Geological Magazine* in 1902. This is the first time that *Anomalocaris* was figured with a head.



Lancaster Burling's reconstruction of *Sidneyia* with the large claws in place, published in the October 1917 issue of the *Ottawa Naturalist*.





Top: Peytoia nathorsti was described as a jellyfish by Walcott in 1911. In fact Peytoia is the mouth of Anomalocaris. To date no jellyfish has ever been discovered in the Burgess shale.

Bottom: Tuzoia retifera was originally described as a crustacean carapace by Walcott in 1912. In 1928 Kai Henriksen attached Tuzoia to Anomalocaris. In fact Tuzoia has nothing to do with Anomalocaris.

Right: Laggania cambria was described as a sea cucumber by Walcott in 1911. In fact Laggania is a poorly preserved part of the trunk of Anomalocaris showing the mouth. This eight-centimetre-long specimen is split, and so the opposing faces can be seen.



The second species described was *Amiella ornata*, which was named after Henry Ami of the GSC. The description was based on a single, nondescript specimen covered with narrow parallel furrows. Walcott thought that it was related to *Sidneyia*.

Walcott's second Burgess shale paper, also published in 1911, was on holothurians (sea cucumbers) and medusae (jellyfish). *Laggania cambria* was the second holothurian species described, based on one baglike specimen with a mouth at one end that was surrounded by a ring of plates. The jellyfish species described, *Peytoia nathorsti*, was based on three specimens composed of thirty-two radiating "subumbrella lobes". Walcott's fourth paper published in 1912, which covered the Burgess shale arthropods, included descriptions of a new species of *Anomalocaris*. He called it *Anomalocaris gigantea* because it was so much larger than the Mt Stephen specimens. He also described *Tuzoia retifera*, a large lobsterlike carapace, ornamented with a reticulate pattern. What do a headless shrimp, a lobsterlike animal with large claws, a nondescript animal with furrows, a sea cucumber, a jellyfish, and a reticulate lobsterlike carapace have in common?

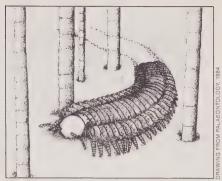
In 1928, soon after Walcott's death, Kai L. Henriksen, a Danish palaeon-tologist, noted that *Anomalocaris* lacked a head, *Tuzoia* lacked a body, they were about the proper size for each other, and both occurred in the Burgess shale, and so he put them together as one animal. Charles Resser, Walcott's second assistant at the Smithsonian, agreed with Henriksen. Consequently after Charles Knight, the famous American diorama painter of prehistoric scenes, asked the Smithsonian for reconstructions of animals from the Cambrian Period that could be published in a 1942 *National Geographic Magazine*, *Anomalocaris* appeared with a *Tuzoia* carapace, along with *Sidneyia* with claws,



In this illustration by Charles Knight for *National Geographic Magazine, Anomalocaris* is shown with a *Tuzoia* carapace, *Sidneyia* has the large claws, and *Peytoia* appears as a jellyfish.

and jellyfish. In the 1940s and 1950s three-dimensional dioramas of similar scenes from the Burgess shale were set up in the palaeontology galleries at the U.S. National Museum (Smithsonian) in Washington, the American Museum of Natural History in New York, the Field Museum in Chicago, the Carnegie Museum in Pittsburgh, and the University of Michigan Museum in Ann Arbor. All except the Smithsonian diorama are still on display.

In 1966 the Geological Survey of Canada initiated the third and final phase of the story by beginning a comprehensive re-examination of the Burgess shale and its fossils. The specimens for the new study were to be from Walcott's original collections of 1909 and 1910, his later collections of 1911, 1912, 1913, and 1917, which were largely unstudied, and new collections to be gathered by the GSC in 1966 and 1967. Digby McLaren, director of the GSC Calgary office and later director general of the whole organization, invited Harry Whittington of Harvard University to take charge of the palaeontological work. Whittington, assisted by colleagues and graduate students from the University of Cambridge (where he moved in 1966), has been working on the project ever since.



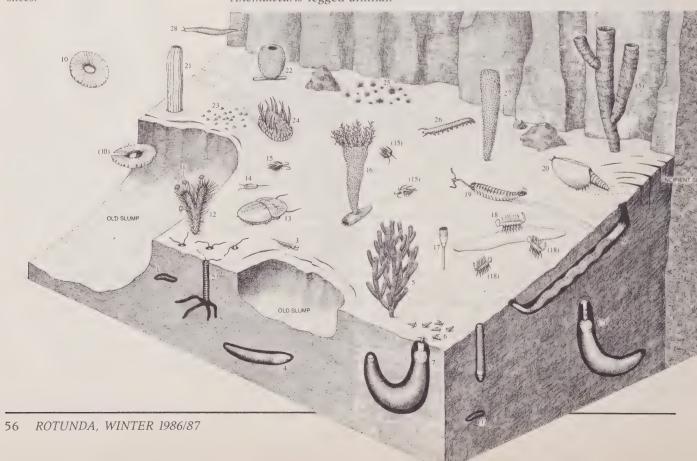
Arthropleura, a two-metre-long, Carboniferous centipede-like animal. Briggs thought that the shrimplike Anomalocaris was the walking leg of an animal like Arthropleura. He also suggested that the large claws, which had been placed on Sidneyia, belonged at the front of the animal with the Anomalocaris legs. In fact, the shrimplike walking legs are the grasping appendages of one species of Anomalocaris, and the large claws are the grasping appendages of the second species of Anomalocaris.

Reconstruction of Burgess shale community by Conway Morris and Whittington, published in *Scientific American* in 1979. At the far left two *Peytoia* are shown looking like incoming pineapple slices.

The new descriptions began to appear, along with some radical reinterpretations, in 1971. One of the first reinterpretations, concerning the holothurian *Laggania*, was made by Simon Conway Morris, one of Whittington's students. He noted the similarity of the radiating ring of plates around the mouth of *Laggania* to the thirty-two radiating "subumbrella lobes" of the jellyfish *Peytoia*, and concluded that *Laggania* was a composite fossil form produced by the superposition of *Peytoia* and a sponge. *Peytoia* was thought to look more like a pineapple slice rather than a bell-like jellyfish with trailing tentacles, and was illustrated in this new way by Conway Morris and Whittington in a reconstruction published in *Scientific American* in July 1979. A similar *Peytoia* is part of a reconstruction of the animals of the Burgess shale that recently appeared in David Attenborough's book *Life on Earth*.

A second radical change was proposed by Derek Briggs, another of Whittington's Cambridge students. He interpreted *Anomalocaris* as the walking leg of a many-legged, segmented arthropod that looked somewhat like the terrestrial Carboniferous *Arthropleura*, which could grow to a length of two metres. Such an interpretation explained the Mt Stephen slabs that were covered with many *Anomalocaris* "legs", and why there was never a head. Furthermore Briggs suggested that the large claws that Walcott had put on *Sidneyia* actually belonged at the front of this large centipede-like animal. Briggs's interpretation was partly supported by David Bruton, formerly of Cambridge, who showed in his study of *Sidneyia* that the large claws do not belong to this animal, as Walcott had thought.

In 1981 Whittington began preparation on a single specimen of an undescribed form collected by the GSC in 1966 or 1967. Using an instrument like a tiny jackhammer with a needle tip he slowly excavated the overlying rock. Much to his surprise he found a pair of *Anomalocaris* "legs" attached to the specimen's "head" region. Part of a radiating circlet of plates also could be seen in the "head" region. Excavation and examination of some similar large specimens from the Walcott collection revealed the complete circlet of plates in the same place on the "head", and a pair of the claws that Walcott had put on *Sidneyia* and that Briggs had attached to the front of a two-metre-long *Anomalocaris*-legged animal.





This is the only known complete *Anomalocaris canadensis*. It is twelve centimetres long. Preparation of this specimen was the key to the solution of the *Anomalocaris* mystery. Whittington exposed the shrimplike grasping appendages in place. Whittington and Briggs then recognized the grasping claws on the head of the other *Anomalocaris* species. Both *Anomalocaris* species have circular *Peytoia* mouths.

Now all of the parts fell into place, for Whittington and Briggs realized that there were two different animals. In one animal, *Anomalocaris* was an appendage as Briggs had suggested, but a grasping front appendage, one of a pair, and not a walking leg. In the other animal, a pair of the large claws was attached in the same position beneath the head. Both animals had a rectangular mouth bordered by the thirty-two radiating teeth previously thought to be the subumbrella lobes of the "jellyfish" *Peytoia*.

Conway Morris was correct when he stated that the radiating structure on *Laggania* was *Peytoia*, but wrong when he thought that it was a composite fossil. Rather it is a poorly preserved *Anomalocaris* animal with its jaws (*Peytoia*) in place. Lastly, *Amiella* is a poorly preserved part of an *Anomalocaris* trunk, showing the furrowed gill rows. *Tuzoia*, the reticulate carapace, has nothing to do with *Anomalocaris*. Therefore, *Anomalocaris* was not a *Tuzoia*-headed shrimp, *Sidneyia* did not have big claws, and there are no jellyfish known from the Burgess shale. Knight's 1942 reconstruction, the 1979 *Scientific American* and *Life on Earth* reconstructions, and the Burgess shale dioramas in the museums in New York, Chicago, Pittsburgh, and Ann Arbor are scientifically inaccurate.

The mystery was solved, even if it was by accident rather than by scientific deduction. Whittington's careful preparation technique and methodical work had unexpectedly revealed the two Anomalocaris animals. Because of their similarity, Whittington and Briggs thought that they were two species of *Anomalocaris*, or male and female of the same species. And what animals they were. They belonged to no known group. They had a body plan previously unknown to science. With their large grasping appendages or claws and radiating teeth, they were obviously predators. They probably swam like cuttlefish, grasping their prey and stuffing it into their circular jaws, which opened out to receive it. From the size of their jaws, claws, and legs (the largest Anomalocaris limbs were twenty centimetres long) we know that they grew to at least a half-metre in length, gigantic by Cambrian standards, and the largest Cambrian animals known. The common occurrence of Anomalocaris limbs with trilobites on Mt Stephen suggest that there was a predator-prey relationship between them in the sea 530 million years ago, but rather than the trilobites eating the shrimps, as Whymper had thought, it was the "shrimps" eating the trilobites.

Whiteaves's name is unwittingly accurate; *Anomalocaris* was certainly unlike other shrimps. It was a monster. From its great age of 530 million years, *Anomalocaris* was, as far as we know, the world's *first* monster. And it took only about one hundred years for the world's best palaeontologists to work out what it looked like.

Desmond Collins is curator in the Department of Invertebrate Palaeontology, ROM.

M·U·S·E·R·S

Helpful Hints for Identifying Fossils

Right: Children from the Royal Ontario Museum's *Summer Experience* program hunt for fossils.



The fossilized remains of *Phacops rana*, a trilobite that lived 370 million years ago, found near Thetford, Ontario



The fossilized remains of the stems of crinoids or sea lilies found in Toronto, Ontario

Artist's reconstruction of the environment at Thetford, Ontario as it may have looked 370 million years ago



Have you ever found a fossil? Do you know what fossils are and how they are identified?

Fossils are the remains or traces of ancient animals or plants that have been preserved in rock. Palaeontologists study and name fossils in much the same way as biologists do living organisms: mainly on the basis of visible characteristics. However, there is an important difference between the work of biologists and that of palaeontologists: biologists usually have a whole animal to study, but palaeontologists have only a part of an animal, and frequently it is a broken part; thus they must fill in the details about the rest of the animal. Most fossils have living descendants or close relatives. Much of our knowledge about fossil organisms comes from a thorough study of living animals and plants and the environments in which they

The fossils of Ontario, for example, are the remains of life that existed in an environment very different from the one that exists today. Most of the fossil-bearing rocks in Ontario were formed from ocean floor sediments of a shallow tropical

sea, similar to the Caribbean, which covered much of our continent between 500 and 350 million years ago. long before the time of the dinosaurs. We know of the existence of this prehistoric ocean because the chemical and physical makeup of the rocks is very similar to that of present-day ocean sediments. The fossils also give us clues. Many fossils (particularly those of brachiopods, echinoderms, and corals) have living relatives that live only in the sea. Scientists believe that these animals have never tolerated fresh water, and therefore the fossil animals must have lived in the sea as

Almost all fossils found in Ontario represent invertebrates—animals without backbones. Although they do not have a bony skeleton, many invertebrates do have some sort of hard protective armour or internal support. It is these hard parts that are preserved as fossils. Among the shelled invertebrates are the molluscs (snails, clams, and cephalopods) and the brachiopods. Both clams and brachiopods have two shells, or valves, which hinge together to protect the soft insides. Fre-



PHOTOS COURTESY DEPT OF INVERTEBRATE PALAEONTOLOGY, ROM

M·U·S·E·R·S

quently the shells are separated, so the fossil may consist of only one shell, or part of a shell. Snails and cephalopods both have a single shell, which may be coiled or straight. In cephalopods the shell is divided by crosswalls, called septa, into many chambers. Often these septa and a connecting tube running between them are all that remain in the fossil.

Arthropods are a large group of animals that includes modern-day lobsters and crabs, scorpions, and insects. They are characterized by having several pairs of jointed legs and an external armour or exoskeleton composed of several segments. Just as present-day arthropods may shed their exoskeleton to grow, so did the ancient animals. Fossil arthropods frequently consist of only a few segments of the original exoskeleton. The discovery of rarer, whole exoskeletons shows us where these pieces fit in the puzzle. The most common fossil arthropods found in Ontario are trilobites and sea scorpions, or eurypterids.

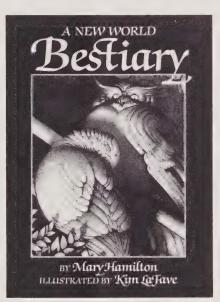
The echinoderms include starfish, sealilies or crinoids, and a host of bizarre extinct forms. Echinoderms have a sort of internal skeleton made up of plates of calcite rather than bone. The plates are joined by soft tissue and are usually scattered when the animal dies. The stems of crinoids are made up of hundreds of discs stacked on top of one another. These often appear as little rings or doughnuts in the rock.

Some invertebrates build communal supporting skeletons of a stony material which they manufacture from chemicals in the sea water. Bryozoans and corals are both represented in the fossil record by the remains of their stony homes. Fossil corals may resemble a honeycomb, a chainlike structure, or a collection of small interconnecting pipes. Another type of coral did not live in colonies but formed conical supports. Because of the resemblance of their skeletons to rams' horns, these are called horn corals. Fossil bryozoans may resemble branching sticks, rounded mounds, or intricate lacy structures, all perforated by tiny

surface holes which were once the homes of the animals that built them.

The specimens described above are only a few of the many strange and not-so-strange animals to be found as fossils in Ontario rocks. Remember that Ontario fossils almost all represent invertebrates that lived in the sea, although those from other parts of the country may have lived in different environments. Fossils are almost always only a part of the original animal. With these points in mind you can begin to identify your own fossils. The ROM Department of Invertebrate Palaeontology will be happy to help you.

JANET WADDINGTON



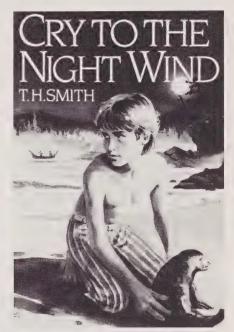
A New World Bestiary

Mary Hamilton Kim LaFave, illustrator Douglas and McIntyre 40 pp. \$12.95 (cloth)

For the explorers who first made contact with the New World, the prospect of a totally unknown wilderness stimulated thoughts of the extraordinary creatures which might be lurking there. Mary Hamilton and Kim LaFave have collaborated on an intriguing collection of verbal and pictorial accounts of some of the more fabulous creatures described by various explorers. They include the Uniped who killed a Norseman in about A.D. 1000, the Mermaids

met by Henry Hudson in 1608, the white Ghost Horse of the prairies, and the Sasquatch of British Columbia. The LaFave illustrations provide a wonderful counterpoint to the intriguing stories of the awesome beasts chronicled by Mary Hamilton.

Recommended for general reading



Cry to the Night Wind T. H. Smith Viking Kestrel 160 pp. \$12.95 (cloth)

Eleven-year-old David Spencer is thrilled to be a crew member on his father's ship as it surveys the mysterious Pacific shores of North America a few years after Captain Cook made his voyage there. But the boy is plunged into more dangerous adventures when he is captured by natives, who then decide he must be a child of the spirits because of his uncanny relationship with a seal pup he has befriended. David must use all his wits—and some luck—before he is finally rescued from a very tricky situation. This first novel is well-paced and should interest adventure enthusiasts.

Recommended for grades 5 to 7

Reviews reprinted from the Children's Book News courtesy of The Children's Book Centre, Toronto



The Museum Makers

THE STORY OF THE ROYAL ONTARIO MUSEUM

Lovat Dickson



This is the story of an internationally renowned Canadian institution.

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THE GROWING COLLECTIONS

▶The European Department has received a magnificent gift of sixteen portrait miniatures from the collection of Dr Ben Kanee. Most of the paintings are by artists who have not been previously represented in the ROM collections.

Through the generosity of Miss Vera Kellett, our collections now include eight portrait miniatures by her sister, artist Edith Kellett, Edith Kellett was an important Canadian artist who was born in England and

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Through a generous bequest of Mrs Alice Hall, the European Department has purchased an early 19th-century scent bottle decorated with a sulphide (glass-paste) cameo.

BRIAN MUSSELWHITE



Lady Felicia Jemima Lygon Portrayed as Hebe, c. 1810, by Mrs Joseph Mee (1770/5-1851). In Greek mythology Hebe is the goddess of youth, the daughter of Zeus and Hera, and the wife of Hercules. She is usually shown with Zeus in the guise of an eagle. Hebe was a particularly attractive subject for late-18th and early-19th-century women.



Scent bottle decorated with sulphide (glass-paste) cameo, c. 1820. The cameo is a portrait of Princess Charlotte, wife of Leopold of Coburg and daughter of the future King George IV. Extremely popular with the English people, her death during childbirth in 1817 stunned the nation. She was eulogized on many objects and this piece is considered one of the more important. The reverse of the sulphide is impressed with the inscription Pellatt & Green, Patentees, London. The bottle is from the Apsley Pellatt Glass house.



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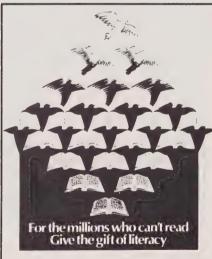
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Catherine Vernon R.R. 2 Branchton, Ont. NOB ILO (416) 659-3005 Many people, after all, call old porcelain vessels "antiques", but if we think of vessels from the view of principle, then we know that once they were meant to be used. Only now they are grubby-looking and unsuitable for us to drink from, and so we end up putting them on our desks or on bookshelves, and look at them once in a while.

The Kangxi Emperor, 1662–1722

The new Chinese galleries exhibit the ROM's collection of furniture, textiles, jades, and lacquers, and even old porcelain vessels so that visitors may admire them and learn about how they were once meant to be used.

As visitors enter the main gallery they are greeted by a small white porcelain figure representing Cai Shen, the Chinese god of wealth. He is a fitting symbol for the world of later imperial China, a period that endured from the beginning of the Song Dynasty in A.D. 960, through the Yuan and Ming dynasties, to the abdication of the last emperor of the Qing Dynasty in 1912. Cai Shen wears the robes of a high-ranking bureaucrat, showing that he is one of the scholar-officials who formed the elite class of China during this time. It was for their delectation that many of the objects in the gallery were made.

The first part of this gallery presents the world of the Song and Yuan dynasties (A.D. 960-1368), a time when China was not only the most populous but also the most technologically advanced region on earth. Chinese cities, with their highly developed cultural and commercial activities, were far more sophisticated than European cities. Displayed here are objects of the period that typify the way of life that so impressed Marco Polo during his visit to China during the reign of the Yuan emperor Kubilai Khagan. There are ceramic hot water bottles, a ewer and cups for the hot rice wine that according to Polo "was better worth drinking than any wine of grapes", and wine jars bearing poetic advertisements for their contents such as: "It is suddenly, after the fading of the hot summer, like the white dance of an old snow-laden pine."

Also displayed are the goods that made China one of the world's great manufacturing nations and exporters: ceramics, bronzes, coins, and antiquities for nearby Japan and Korea; and celadons that were fired by the tens of thousands in giant "dragon kilns" and shipped to the Islamic world. A smaller side gallery houses the ROM's collection of fine Song and Yuan ceramics, objects of such excellent technical skill and calm beauty that they are still regarded today as outstanding examples of ceramic art.

The second part of the main gallery is devoted to the Ming and Qing dynasties (A.D. 1368–1911). During these years, commerce and the arts continued to flourish, but society was slower to change. This portion of the gallery is built around a stone-floored courtyard that is intended to suggest the interior courtyard of a Chinese house. Flanking the doorway are two cases displaying porcelains deftly painted with scenes from the great operas and historical romances of Chinese literature, and with scenes of the "ideal" life—children at play, scholars enjoying their leisure, and dauntless hunters.

A case screens the entrance to the gallery courtyard in much the same way that the spirit screen blocked the view of the house courtyard from passers-by.



Later Imperial China

Kathryn Pankowski Exhibit Programmer

Michael Peters Designer

Patty Proctor Curatorial Fellow Far Eastern Department



Above: Glazed stoneware jar with slip and cut-glaze decoration, 35.7 cm diameter, 30.5 cm high, Jin/Yuan dynasties, 13th to 14th century. Left: Pillow decorated with boy and escaped bird, glazed stoneware with slip and underglaze painted decoration, 30 x 20 x 10.5 cm, Jin Dynasty, 12th to 13th century.



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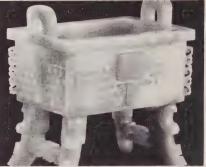
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GALLERY GLIMPSES



Jade tetrapod, 16.2 x 13.5 x 10.5 cm, Qing Dynasty, 17th to 18th century. This object is a play on a Bronze Age ritual vessel used for cooking meat for the spirits of dead ancestors.



Emperor's twelve-symbol dragon robe, 154 cm long, Qing Dynasty, c. 1770, with border trim added in the 19th century.



Jade figures (Daoist immortal with acolyte), 24.1 cm high, Qing Dynasty, late 17th to 18th century.

Jades and ceramics exhibited in the case were fashioned according to antique styles. This is an indication of the nostalgia for bygone days that pervaded intellectual life during the last thousand years of imperial China.

Representations of a formal reception hall, a sitting room, a scholar's study, and a bedroom, which all reflect the taste and way of life of a scholar-official in later imperial China, can be found along one side of the gallery courtyard. Another exhibit in this area presents clothing and jewellery, including an imperial dragon robe, carved jade belt hooks, and a court necklace.

There is also an ancestor portrait. Such portraits were painted when the subject was gravely ill or had just passed away. To allow orders to be filled quickly, the robed figure and background were prepared beforehand. After observing the subject, the painter returned to his studio to make any necessary alterations to the figure, to add the appropriate insignia of official rank, and to paint the face—either from memory or from examples of facial features illustrated in manuals.

Another, smaller side gallery holds collections of more objects from the Ming and Qing dynasties. There are the celebrated blue-and-white porcelains of China, as well as the lesser-known monochrome porcelains, and those enamelled with brightly coloured, low-fired glazes. Lacquers are the product of a dangerous and time-consuming craft: even the fumes from raw lacquer are poisonous, yet some pieces displayed here are built up from as many as two hundred separate coats. Jade was always an important and revered material in China; the gallery contains not only exquisitely carved vessels, but many small sculptures, probably given as gifts, which express through elaborate puns the age-old Chinese wishes for the Five Happinesses—a good marriage, sons and grandsons, wealth, honour, and long life.

Those who wish to linger in our galleries may sit by the garden in the courtyard. In China people gathered in such gardens to appreciate their beauty and to admire paintings, listen to music, compose poems, and relax.



Ivory vase decorated with the "one hundred babies" theme, 31.5 cm high, Qing Dynasty, 18th century.



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Engineer's Witness
Ralph Greenhill
The Coach House Press, Toronto
David R. Godine, Publisher, Boston
207 pp. \$40.00 (cloth)

Reviewed by Geoffrey Simmins, art historian and freelance writer.

It may be a toss-up whether to declare breakthroughs in engineering or the invention of the camera, which recorded those engineering achievements, as the 19th century's greater accomplishment. Perhaps the two are inseparable, for throughout the century, as the engineers made their breakthroughs the camera breathlessly recorded them, both reflecting the voracious public appetite for Science and Progress.

With hindsight, we can discern the development of a distinct and characteristically 19th-century art form: photographic views of the industrial sublime. Most of the views were celebratory as they captured the actual moment when the span was crossed, the tunnel was pierced through, and the gleaming turbine was awakened into life. However, some photos simply reflected the camera's seemingly omnivorous interest in any and all signs of material progress.

Hence Engineer's Witness, a book that rekindles some of the excitement that the 19th century felt for engineering in its broadest and most positive sense. The book offers a select group of images representing American and Canadian engineering achievements. Each image is complemented by a crisply worded, short essay that identifies the photo-

grapher and his subject. With knowledge and insight, author Ralph Greenhill describes the technical process involved in photographing a particular view, and often the engineering accomplishment that it represents. These insights are bolstered by writings of the period.

But this is no historical survey of engineering, nor is it addressed to those unfamiliar with the broad outlines of the history of photography and engineering. Instead, Greenhill has based his choices on the sole criterion of photographic excellence, which explains what might otherwise seem like a quirky selection. The photos are not necessarily of the "biggest" or the "firsts", nor do they provide a chronological survey.

Few authors would have been more qualified than Greenhill to make such choices. A professional photographer of considerable merit, Greenhill is the author of several books on the history of photography and a former collector. He succinctly described his attitude to collecting when he told a photography journal: "I have always said that I only collected first-rate material-by this I mean material of museum quality because I could never afford and never had space for anything else." He eventually sold the bulk of his personal collection to the National Gallery of Canada and then, in 1976, organized The Camera as Engineer's Witness, the exhibition on which the present book is based.

One of my favourite images in the book is a daguerrotype showing the Portage Viaduct on the Buffalo & New York City Railroad. A train is frozen in time at the moment it reached the middle of the viaduct. Below, a lone person is standing in front of a tumultuous waterfall at the bottom of the chasm that is spanned by the viaduct. The image allows us to sense the occasion as the photographer did: the moment before Nature settled back into silence. Such an image serves to remind us how inextricably bound up with the artistic vision of the period such ostensibly technical views were. For the vision it exploits is related to the

repertoire of Romantic painting. The theme is the empathic response of a sensitive viewer faced with nature besieged by progress.

On an entirely different note, I also liked the view of upper Mississippi steamboats taken in 1858 when the boats were at their height of popularity. Four of them crowd into the shore like pigs at a trough.

Greenhill has also selected views that depict the working man's pride in playing an important part in making these feats of engineering possible. Even while suffering the most brutal and dehumanizing conditions-for instance, many workers died from the bends after surfacing from caissons set deep under riverbeds—the workers waited calmly, stoically, heroically, for their image to be recorded. It is as if the camera legitimized their labour, elevating it above the dirt and mud and deadly chaos typical of the 19th-century construction site.

If the strength of Engineer's Witness lies in the potency of the images Greenhill has brought together, this is, nonetheless, a book of vignettes, and its vision suffers from a miniaturist's focus. Moreover the transformation of exhibition to book has not been entirely successful. The book reads as though the exhibition captions were simply bound together, which is in a sense what took place. The disparate images might have been brought together by a lengthier text; the material urgently calls for a unifying theme, which the scanty five-page introduction does not provide.

And I wonder whether in the process of selecting these memorable images, which are superbly printed with Coach House Press's usual skill, Greenhill elevates them to a level to which they never aspired. Is this a connoisseur's vision imposed on an essentially haphazard material record of progress celebrated? We must respect Greenhill's right to place these views into a new context: but in doing so, he dresses them up in their Sunday best when they might have felt more comfortable in work clothes.

Chestnuts Roasting on an Open Fire

- 1. Captain Cook discovered and named Christmas Island in the south Pacific on Christmas Eve in 1777. From that time until 1982 the island had been best known for the number of sea-birds nesting there—some sixteen million. In 1982 Christmas Island suddenly captured the interest of scientists all over the world. Why?
- 2. After looking at many Christmas cards, a British scientist noted that seventy-three per cent of the cards portraying the mother and child had Mary holding the infant Jesus in her left arm. Why is this so?



3. As you carve the Christmas turkey, carefully setting aside the wishbone for future wishmaking, answer one of these two questions: what is the human analogue of the wishbone, or what fossil creature owes its fame to feathers and a wishbone?

- 4. Have astronomers ever agreed on the identity of the Christmas Star?
- 5. Is it true that no two snowflakes are alike?

JAY INGRAM

The answers are given below.

agine how even two tlakes could have exactly the same history. On the other hand it is estimated that an amount of snowflakes equal to fifty times the the last three billion years of Earth history. That's one hundred billion trillion snowflakes (one followed by there might be identical snowflakes in that huge quantity. But—and this is the clincher—in each snowflake there are a million trillion water molecules, and when you try to imagine how many different you try to imagine how many different you try to imagine how many different ways in which the molecules are a million trillion water molecules, and signed ways in which the molecules.

5. It is probably true that there **never** have been any identical snowflakes, but of course it cannot be proven. Each flake has a different history: where it started, how fast it fell, and what temperatures and humidities it encountered as it grew. All of these factors determine how and where water molecules are added to the flake. The final shape of the flake is a record of that history, and it is hard to impagine how even two flakes could have exactly the same history. On the other hand it is estimated that an amount of

the apples were actually covert representations of the stars (astrology was illegal in the Lst century A.D.), and that in fact the constellation depicted is Aquila. All of the apples in the tree correspond to the stars in Aquila except for the apple indicated by the man. Beehler suggests that this apple may represent the now invistible Christmas Star.

pieve, the Wise Men were Persians, and lieve, the Wise Men were Persians, and if, like others of their culture, they were fond of such events, they would have loved this so-called triple conjunction. But a recent analysis of a ceiling painting in one of the Christian catacombs in Rome revives the idea that the Christmas Star might have been a nova, a star that flared up briefly, and then faded into obscurity. Tucked away in one corner of an otherwise uninteresting scene in the painting is a madonna and child. A man standing beside them points to one apple of many in a nearby tree. Biblical scholar of many in a nearby tree, sibilical scholar of many in a nearby tree, sibilical scholar of many in a nearby tree, sibilical scholar of many in a nearby tree. Biblical scholar of many in a nearby tree, sibilical and scholar of many in a nearby tree, sibilical and scholar of many in a nearby tree, sibilical and scholar of a scholar of the many in a nearby tree, sibilical and scholar of the many in a nearby tree, sibilical and scholar of the many in a nearby tree, sibilical and scholar of the many in a nearby tree and scholar of the many in a nearby tree and scholar of the many in a nearby tree and scholar of the many in a nearby tree and scholar of the many in a nearby tree and scholar of the many in a nearby tree and scholar of the many in a nearby tree and scholar of the

4. No. What has by now become the standard, and frankly not very exciting explanation, is that the Christmas Star was actually a close grouping of three planets in the night sky. If, as some be-

ishings. The lamous 105sh with a wishbone is Archaeopteryx, thought to be the first bird. Archaeopteryx lived at just about every way it is indistinguishable from a small, running dinosaur, except for its feathers and wishbone.

3. The answer to the first question is easy. The wishbone, or furcula as it is properly called, is a fused set of collar-bones. The bones are fused because birds must have light, but firmly braced skeletons for control in flight and those inevitable hard landings. The famous fossil with a

the Christmas card survey because **not one** card showed Joseph holding Jesus.

babies. This was not discovered through preference for the left side when holding hands. Oddly enough, men show no tocks at small game with their free right babies in their left arms, while throwing early hominid mothers who carried their species owes its handedness to those that our predominantly right-handed taken it a step further though, suggesting neurophysiologist William Calvin has to the left side of centre. American heartbeat, and the heart does lie slightly when they can hear the mother's that babies are more easily comforted held their babies on the left side. It is true five per cent of the mothers surveyed

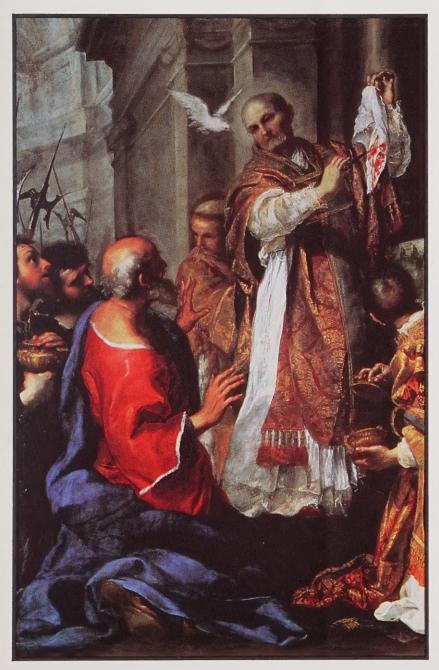
mothers in supermarkets to paintings of mother with child, more than seventy-

2. It's not just Christmas cards. From

been found. millions at sea; their bodies have never Inck and they presumably died by the longer reach them. The birds were out of fed on the fish and squid, could no The Christmas Island birds, all of whom greater depths than they do normally. forced fish and small squid to live at Ocean to change dramatically, and this the surface temperatures of the Pacific is that the El Nino winds of 1982 caused what it was before 1982. An explanation Island is less than twenty per cent of today the bird population on Christmas million sea-birds just vanished. Even months, perhaps as many as fifteen I. The birds disappeared. Within a few

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